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AGENDA OF THE CHIARMAN'S ADVISORY COMMITTEE ON ENVIRONMENTAL ISSUES

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CHAIRMAN'S ADVISORY COMMITTEE

ON ENVIRONMENTAL ISSUES

***NOTE - FRIDAY, JANUARY 12, 1990 - 8:30 a.m.**

COMMITTEE ROOM 15TH FLOOR, ELLEN FAIRCLOUGH BUILDING

AGENDA

1. (i) Minutes of Meeting - December 14, 1989
   (ii) Business Arising from minutes.

2. Environmental Conference of 1990

   A draft outline attached.

3. Letter from P. Muldoon, R. Baetz, and B. McHattie on the reporting aspect of this Committee and a document titled "Promises and Reality Which Outlines The Results Of A Workshop On Environmental Advisory Committees".

4. Letter from P. Muldoon and B. McHattie

   RE: Comments on the Hamilton Harbour Marina Expansion Concept.

5. Zebra Mussel Contamination Of The Municipal Water Supply Systems.

6. The establishment of an ecological and Environmental Advisory Committee.

   For the information of the Committee.

7. Environmental Achievement Awards

   For information of the Committee.

8. The Impact of Increased Recycle Rates On Markets In Florida

   For information of the Committee.

9. Your Guide to Waste Reduction And Recycling In Metropolitan Toronto.

   For information of the Committee.

UNFINISHED BUSINESS:

OTHER BUSINESS:

Jan. 12

Ruth Greenwood
Hamilton Public Library
Urban Municipal Collection, 2nd Floor
55 York Boulevard
Hamilton, Ontario
L8R 3K1 (PI)

#1

CHAIRMAN'S ADVISORY COMMITTEE

ON ENVIRONMENTAL ISSUES

The Chairman's Advisory Committee on Environmental Issues met on Thursday, December 14, 1989 at 8:30 a.m., Ellen Fairclough Building, 15th floor, Committee Room, Hamilton.

ENG 90-03

PRESENT:

Chairman R. Whynott	
Councillor J. Prentice	Chairman
Councillor G. Copps	
Paul Muldoon	Hamilton Environmental Action Team
Brian McHattie	Hamilton Naturalist Club
Ray Steward	Ministry of the Environment
W. Pedder	International Union of Operations Engineering Local 793
K. Ingram	Representing Rashne Baetz
S. Spencer	Regional Engineering
Prof. Keith Murphy	McMaster University
J. Barr	Planning and Development Department
C. Donaldson	Planning and Development Department
J. Hindson	Information Systems
D. Edwards	Legal Services
Val Terluk	Regional Engineering
J. Taplay	Specialisting Home Air Conditioning

The Chairman's Advisory Committee on Environmental Issues presents **REPORT #1-90** and respectfully recommends:

1. By-Law on chlorofluorocarbons

Recommendation

i) That the Regional Solicitor prepare a By-Law on chlorofluorocarbons for the Regional Municipality of Hamilton-Wentworth similar to the Toronto By-Law and circulate to the appropriate departments, area municipalities and organizations for their comments.

ii) That the Regional Solicitor report back to this Committee on this proposed By-Law for the March 1990 Meeting.

Respectfully submitted

J. Prentice
Chairman

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Information Items

(a) Letter from R. Baetz in connection with:

(1) Household hazardous waste disposal
(2) Effluent draining from Tricil vehicle

(b) Looking Ahead To A Critical Decade

(c) Purchasing's environmental rule

(d) Home Composting Program

(e) Zebra Mussel Contamination of the Municipal Water Supply Systems

To be discussed at the next meeting.

The following Items were tabled until the next Meeting:

(a) Brenda Axon, Vice-Chairman of the Halton EEAC Committee to advise the Committee on how their Committee works.

(b) Environmental Conference 1990

(c) Letter from P. Muldoon, R. Baetz, and B. McHattie

(d) The establishment of an ecological and Environmental Advisory Committee

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W. Pedder	International Union of Operations Engineering Local 793
K. Ingram	Representing Rashne Baetz
S. Spencer	Regional Engineering
Prof. Keith Murphy	McMaster University

ALSO PRESENT:

J. Barr	Planning and Development Department
C. Donaldson	Planning and Development Department
J. Hindson	Information Systems
D. Edwards	Legal Services
Val Terluk	Regional Engineering
J. Taplay	Specialisting Home Air Conditioning

1. Minutes of the meeting of November 9, 1989.

Under Item 2 it was indicated that "Concepts of Sustainable Development" be changed to read "Draft on Sustainable Developments".

Under Item 5 in the first line "Ontario Waste Management Corporation" be changed to read "Environmental Assessment Act Process".

Under Item 6 on page 4 paragraph 7 should read "R. Baetz suggested that this Committee should set some goals and work within the original terms of reference".

It was moved by P. Muldoon and seconded by G. Copps that the Minutes as amended be approved. Carried.

2. Brenda Axon, Vice-Chairman of the Halton EEAC Committee to advise the Committee on how their Committee works.

It was moved by Prof. Murphy and seconded by G. Copps that this item be tabled as Brenda Axon could not attend the meeting as she was ill. Carried.

3. Presentation by J. Taplay on chlorofluorocarbons (CFC's), a twenty minute slide presentation.

The members viewed the slide presentation and the following comments were made:

J. Taplay followed his slide presentation with the comment that any amount of CFC's being released to the atmosphere is unexceptable. He suggested that if the person installing the freezeon is not properly trained in this type of operation, it is easier to release the CFC's into the atmosphere than trying to capture them.

Chairman Whynott indicated that there is an awareness of this issue but that the actual product is a problem.

What do we do with the CFC's that are replaced. Sometimes the solution seems greater than the problem. Mr. Taplay again expressed the need for trained people for the removal and disposal of this type of waste.

Councillor Copps suggested that this may be a subject that should be reviewed by the Board of Health.

It was also pointed out that the responsibility for labelling this product and the transportation of same is not clear.

Mr. Pedder expressed his concerns with the shredding and disposal of air conditioning units from cars being demolished.

Chairman Whynott indicated that these units were being disposed of in a separate manner by the larger scrap dealers.

Mr. McHattie indicated that small scrap dealers are crushing the vehicles and making no attempt to trap the CFC's. Mr. Muldoon was concerned that this Region is taking no action in this respect.

It was suggested that the By-Law prepared for the City of Toronto be adopted and circularized to agencies for their review. Mr. Ingram pointed out that some agencies are taking steps to recover the CFC's and the proper disposal of same.

Mr. Taplay is concerned that the smaller agencies or organizations are not doing anything with respect to this problem. He indicated that there is a machine available at a cost of approximately $8,000 which can be used to recover the CFC's. He also pointed out that there is no legislation at the present time to control the use of CFC's and the proper disposal of them.

Mr. Ingram indicated that this product is a hazardous waste in the global aspect but not for the population as a whole at this time.

Mr. McHattie indicated that the City of Toronto has a pilot project to pick up refrigerators at the present time but he did point out that when these refrigerators are picked up, any freezeon that would normally be in the refrigerators has already been released to the atmosphere.

Mr. Pedder asked whether or not we have the authority to ask scrap dealers what they are doing in connection with the air conditioning units of vehicles being demolished. The members agreed that the By-Law for CFC's has to be a Province wide By-Law but that we could start by preparing a By-Law similar to the City of Toronto.

Professor Murphy indicated that a car would have more CFC's in their units than would a house. He also pointed out that vehicles manufactured after 1992 will have a different type of air conditioning unit installed in them.

Mr. Muldoon stated that the Region must set a strong positive action to ban CFC's.

Mr. Muldoon suggested that an appropriate By-Law be prepared in that it should be circulated to appropriate departments and agencies and area municipalities. He also suggested that the Ministry of Environment be requested to take the necessary action to put in place proper disposal of CFC's.

It was moved by G. Copps and seconded by W. Pedder and carried that the Regional Solicitor prepare a By-Law on chlorofluorocarbons for the Regional Municipality of Hamilton-Wentworth similar to the City of Toronto By-Law and circulate to the appropriate departments, area municipalities and organizations for their comments.

It was requested that Legal Services report back to the Committee on this proposed By-Law for our March 1990 meeting.

4. Environmental Conference 1990

It was suggested that the following items be added to the proposed draft: a workshop on household hazardous waste, a workshop on air pollution, incineration to be added under the Section of solid waste management. It was also suggested that sustainable development be considered as part of the workshop. It was moved by G. Copps and seconded by R. Steward that this item be tabled until next meeting as Councillor Hinkley who had originally proposed this conference was not present at the meeting.

5. Letter from P. Muldoon, R. Baetz, and B. McHattie

Councillor Prentice indicated that he is preparing a letter in reply to the above mentioned letter.

Mr. McHattie wondered how quickly changes could be made to the Committee.

Mr. Muldoon suggested that the mandate of this Committee should be expanded.

Councillor Prentice indicated that his reply would go to all Committee members.

It was moved by Prof. Murphy and seconded by G. Copps that this item be tabled. Carried.

6. Letter from R. Baetz in connection with:

(1) Household hazardous waste disposal
(2) Effluent draining from Tricil vehicle

Mr. Terluk indicated that he did not agree totally with what had been said in the letter about the household hazardous waste disposal. In reply to Item (1) Mr. Terluk advised that the Region is putting together a advertising program so that homeowners can dispose of hazardous waste on a daily basis and this would solve a problem such as this in the future. He pointed out that a vehicle called a toxic taxi could be involved in the program.

Mr. Spencer advised that some advertising on hazardous waste will appear in a advertising promotion scheduled for early in the new year.

Mr. Spencer indicated that staff will review with Tricil personnel the problem of effluent draining from Tricil vehicles while in transit.

Mr. Terluk indicated that the major haulers have their concerns with what they pick up in the disposal bins from different agencies as the material is generally picked up by the hoist arms and dumped into the back of the vehicle.

It was moved by G. Copps and seconded by W. Pedder and carried that this item be referred to the Engineering Department.

7. Looking Ahead To A Critical Decade

Mr. McHattie indicated that he had attended the Environment Strategy for Ontario Conference and he pointed out that he came away from that Conference with a lot of information.

Mr. Barr indicated that he will keep this Committee updated on sustainable development.

Ms. Donaldson indicated that there will be a round table announcement shortly.

Councillor Copps asked who might be on the Committee for sustainable development and she was advised that the Committee make-up and Terms of Reference were being addressed at the present time.

It was moved by G. Copps and seconded by P. Muldoon and Carried.

8. The establishment of an ecological and Environmental Advisory Committee

It was moved by Professor Murphy and seconded by G. Copps, and carried that this item be tabled until the next meeting.

9. Purchasing's environmental rule

The secretary was requested to forward a copy of this information to the City Purchasing Department, Attention: Mr. T. Bradley.

For the information of the Committee.

10. Home Composting Program

Mr. Spencer advised the Committee that he had to present this report to the Engineering Services Committee at the December 11 meeting in order to have Council's approval for the authority to order the units for early 1990 delivery providing this Committee endorsed the recommendation.

Mr. Ingram wondered if we were buying the best unit.

Mr. Terluk indicated that he had received positive feedback from the City of Toronto who had purchased approximately 17,000 of these units approximately one year ago. The boxes are guaranteed for a five year period. He pointed out that there are several units available but that this is the most popular unit being used in Ontario.

Mr. Pedder asked about combustion that may occur in these units.

Mr. Terluk indicated that he had not heard of any of these units being a fire hazard.

Mr. Spencer advised that these units would be available around the 1st of April and that students would be hired in the summer of 1990 to review the performance of these units.

NEW BUSINESS

1. Zebra Mussel Contamination of the Municipal Water Supply Systems

It was suggested that the members review the material and be prepared to discuss at the next meeting.

OTHER BUSINESS

Mr. Pedder advised that at a previous meeting food wastes from hotels, etc., had been used by pig farmers in the past but he advised that these wastes cannot be used until they are boiled and it appears that this waste is not being used anymore.

Councillor Copps advised that she had heard that tires are being burned in Lackawana, New York and she wondered if this was a good disposal system for tires.

Mr. Spencer advised that systems are available to burn asphalt shingles and tires but the admissions from the combustion of these materials may not be acceptable to the public.

J. Barr advised that the attached report on Sustainable Development had gone to Regional Council. This report was distributed to the members for their information.

P. Muldoon indicated he will supply information on a paper entitled "Right To Know" for our next meeting.

UNFINISHED BUSINESS

Letter from J. Taplay on chlorofluorocarbons.

It was moved by W. Pedder and seconded by R. Steward to adjourn the meeting at 11:30 a.m.

John L Ramsay

Jack Ramsay
Secretary

#2

HAMILTON-WENTWORTH

ENVRONMENTAL ISSUES SYMPOSIUM/WORKSHOP

OBJECTIVE

To convene a community based enviromental conference for the citizens of Hamilton-Wentworth to discuss the enviromental issues for the '90s in our Region. The conference will be an educational forum for Regional citizens on the issues/actions being addressed by various sectors of the community and provide opportunities for public input to the poltical/technical decision makers.

SCOPE

The symposium will address a wide range of environmental topics related to the following three principal focus areas;

1. Solid waste management
2. Water pollution control
3. Air pollution control

Within each of these broad based generic categories, a number of specific sub-issues have been identified in the proposed program

The participants will be drawn from the local community and will include representatives from the manufacturing sector, the government sector (local and provincial), the educational sector (Mohawk College & MacMaster University), environmental interest groups and the citizens of the Hamilton-Wentworth Region.

FORMAT

The conference will be an interactive format consisting of a series of plenary sessions for technical presentations followed by workshops related to the issues presented in the plenary.

It is proposed the keynote speaker for the conference shall be a national or international celebrity in the environemental field. The keynote speaker would be requested to discuss global environmental issues in the context of the local community and the average citizen. It is anticipated that the keynote speaker would establish the atmosphere for the conference and provide an overall focus for the participants.

Since the objective is to provide a community oriented conference, it would be appropriate to schedule the event for the weekend time period when a greater number of citizens may be available to participate. Given this criterion, it would be necessary to schedule all of the sessions over a two day period.

Day 2 - Afternoon (Solid Waste management session continued)

- Workshop C - Hazardous waste management
- Workshop D - Impact of environmental legislation on waste management

- Plenary Session (Air pollution control issues)
  - Provincial standards and historical review
  - air quality issues of the '90s
  - industrial perpective on air quality issue
  - scientfic/academic perspective on air pollution issues

  - Discussion from delegates on air pollution control

- Concluding remarks and conclusions

CONFERENCE FUNDING

The cost of this undertaking would likely be in the order of $40,000 to $50,000. To make the conference accessable to as many citizens as possible, it would be desirable to have a nominal registration fee, perhaps $25. This implies that the cost of the conference would be absorbed by the municipality or corporate sponsorships. If the committee supports this concept then it will be necessary to make a budget submission for Council's consideration in the upcoming 1990 budget process.

CONFERENCE ORGANIZATION

It is recommended that a conference organizing committee be established consisting of three members of the Environmental Issues Sub-committee and one staff member for each of the following departments; Engineering, Planning. Economic Development and Finance. The organing committee would determine if external resources were required.

#3

November 20, 1989

Mr. John Prentice,
Chairman,
Chairman's Advisory Committee on
Environmental Issues,
Regional Municipality of Hamilton-Wentworth,
71 Main Street West,
Hamilton, Ontario.

Dear Mr. Prentice,

At the last meeting of the Chairman's Advisory Committee on Environmental Issues, there was some discussion on a number of issues pertaining to: the role of the committee, what bodies it should report to, and how matters are referred to it. At the time, you informed the Committee that you would contact Regional Chairman Reg Whynott to further discuss these issues. To assist in this discussion, we would like to outline some of our thoughts and concerns and ask you to make them known to Mr. Whynott.

When reflecting upon the discussion at the previous meeting, we believe that there are two issues which must be addressed. These issues are: (1) What regional committees should the Chairman's Advisory Committee on Environmental Issues (CACEI) report to in order to fully discharge its mandate? and (2) What mechanisms or requirements should be in place to ensure that the appropriate and relevant matters are before the CACEI? These issues are discussed below.

(1) What Regional Committees should the CACEI Report to?

At the present time, the CACEI reports its recommendations solely to the Engineering Services Committee. Certainly, many important environmental issues are dealt with by this Committee, and hence, it is appropriate that the CACEI retains its ability to make recommendations to this Committee. However, it is our belief that, if the CACEI is to fulfill its mandate, it **must also have the ability to report and make recommendations to the Economic Development and Planning Committee**. In effect, what is being suggested is that the CACEI have the ability to make recommendations to both the Engineering Services Committee and the Economic Development and Planning Committee. The rationale for this dual reporting structure is as follows:

(a) The Planning Department has an incredibly important role to play in the protection and improvement of the Region's environment. For example, the Department at this moment is studying how sustainable development principles can be integrated

EEAC: PROMISE AND REALITY

Notes from the Intermunicipal EEAC meeting held Saturday, June 17, 1989 in Guelph, Ontario from 9:00 a.m. to 1:30 p.m. The Waterloo, Halton and Niagara EEACs co-sponsored the meeting with the Waterloo EEAC and its chairman, Mark Dorfman, acting as host.

Attendance

Niagara EEAC:

Charlie Pryer	(Chairman)	Greg Faraday
Mike Collins	(Vice-Chairman)	Stan Petit
Rick Brady		Allan Veall
Ron Caston		David Miller (Staff)
Phyllis Kerkhoven		Don Campbell (Staff)
Mike Dickman		Kim Fowler (Staff)

Halton EEAC:

Debbie Ramsay	(Chairperson)	Peter VanDijken
Douglas Banting	(Vice-Chair)	Nancy Tilt
Brenda Axon	(Vice-Chair)	Mike Bensen
David Greenfield		

Waterloo EEAC:

Mark Dorfman	(Chairman)	Harry Pal
Ray Tufgar		Walter Grazieni
Diane Damman		Frank Watty (Staff)
Shirley Rosenburger		Sally Thorsen (Staff)
Gordon Murchison		

Others:

Terry Grawey	(City of London)
Brenda Phillips	(Stratford)
Jamie McEwen	(Region of Durham)
Christine Kowalyk	(Ministry of Municipal Affairs)
Nancy McMinn	(London)
April Ionson	(Greater Thames Conservation Authority)

Introduction

The meeting was meant as an opportunity for EEAC members and supporting staff to examine together their experiences, challenges and prospects. Two general objectives were set for the meeting:

1. To learn from the successes and difficulties of other EEACs and explore differences and common challenges.

2. To discuss the possibility of organizing a larger joint forum to be hosted by Niagara in the Fall.

The meeting was organized around four sessions:

- Organization (Membership, Composition, Procedures).
- Mandate and Activities
- Making the Process Work
- Fall Conference

EEAC Organization

Chaired by Mark Dorfman (Waterloo EEAC)

Panel:
Mike Collins (Niagara EEAC)
Brenda Axon (Halton EEAC)
Diane Damman (Waterloo EEAC)

Each EEAC representative gave a short description of their EEAC. Topics covered included membership, composition, procedures and relationships of staff, council, government agencies. The following chart summarizes the basic characteristics of each EEAC.

Halton	Niagara	Waterloo
18-23 Members including 1 Councillor	21 Members including 6 Councillors	12 Members with No Councillors
Indefinite term. Vacancies filled in groups of 4 or 5 (approximately every 2 years) Vacancies advertised.	3 year term. EEAC replaced or reappointed with new Council. Advertises for new members.	3 year term. At least 4 re-appointed or replaced each year.
New members selected by existing EEAC and staff Endorsed by Council	Councillors appointed by Planning, Public Works, and Human Service Committee. These Councillors select lay members with staff assistance. Endorsed by Council.	New members recommended by staff, endorsed by Council.
Members represent a mix of expertise based on working or professional experience. Members come from public, private and academic backgrounds.	Members represent a mix of expertise as well as political and community representation	Members represent a mix of expertise. Close relationship with gov't agencies.

Halton	Niagara	Waterloo
Chairperson elected annually	Chairperson elected for 3 year term	Chairperson elected annually
Forms Subcommittees to examine specific issue or proposal	Has 3 formal Subcommittees - Natural Areas - Waste Management - Water Technology	Makes occassional use of Subcommittees
Meetings are Public	Meetings are Public	Meetings are Public with agendas sent to media.
Has a basic operating budget (conferences, mileage, etc) as well as some funding for special projects	Has a basic operating budget	Has a basic operating budget with additional funding for special projects
Reports to and advises Planning and Development Committee	Reports to and advises Council through Planning Committee	Reports to Planning and Development Committee
Items generally referred by staff to EEAC	Items referred by Council (usually through staff) or raised by an EEAC member	Items referred through staff (procedure outlined in Official Plan)

One of the more interesting differences between EEACs was the level of political representation. This ranged from no representation on the Waterloo EEAC to significant involvement at Niagara. Having political representation can increase political awareness improve communication, and forge a closer link with Council. Some, however, questioned whether this representation could potentially politicize EEAC decisions.

Mandate and Activities

Chaired by: Debbie Ramsay (Halton EEAC)
Panel: Don Campbell (Niagara Staff)
Doug Banting (Halton EEAC)
Ray Tufgar (Waterloo EEAC)

The basic mandate and activities of each EEAC were discussed in this session. On a general level, the mandates of the three EEACs are similar. Each EEAC is primarily charged with providing technical or expert advice to its respective Council. Beyond this general statement, however, each EEAC pursues and interprets its mandate in different ways.

Halton EEAC:

The Halton EEAC fulfills its mandate primarily through four functions:

- Review of development applications in Environmentally Sensitive Areas (ESAs);
- Review of Environmental Impact Assessments;
- Monitoring of activities in ESAs; and
- Providing a public awareness program on Halton's natural environment.

In terms of development review, the EEAC can be involved in providing basic comments or suggesting terms of reference for an environmental study. They will also review study results and may contribute information. There has been some involvement in general topics and issues with environmental concerns, like the closure and after-use of the Burlington landfill. Ongoing initiatives related to ESAs include maintenance of an environmental data bank and the review and update of ESA designations.

Educational efforts of the Halton EEAC have led to participation in environment week, tours of the Region, and production of a brochure on Halton's Natural Environment.

Waterloo EEAC:

The mandate of the Waterloo EEAC is established in relatively detailed terms of reference. The role of EEAC in the review of development proposals affecting ESAs is also outlined in the Regional Official Policies Plan. This review process is the priority commitment at present. The basic roles of the EEAC are (in order of current priority):

1. Plan Review
2. Technical Advice
3. Monitoring
4. Education.

Other projects of note include:

- A State of Environment report for the Region with an Environmental Planner who will work with EEAC. Part of the development of this report will involve the establishment of an emminent persons committee for community outreach.
- Providing advice to private landowners with particular ESAs assigned to EEAC members.

- Assisting in ESA policy development and the formulation of management plans for ESAs.
- Producing programs on the environment for the local Cable T.V. station.

Niagara EEAC:

The Committee's mandate is to provide technical advice to Council on environmental matters. A relatively flexible approach has evolved towards fulfilling this mandate. The Committee's terms of reference set out in general terms how items may come before EEAC. First, a Standing Committee of Council may refer a matter to EEAC. This usually occurs on the recommendation of staff or the initiative of an individual Councillor. Secondly, EEAC may itself raise topics that it wishes to pursue. Issues addressed have ranged from specific development proposals to broad policy issues.

In terms of development proposals, the mandate has not been tied strictly to ESAs. Specific development proposals (subdivisions) are not routinely reviewed. Rather, EEAC has played a role in such issues as:

- Proposed amendments to the Niagara Escarpment Plan
- Review of Provincial Policy Statements (Wetlands)
- Review of plans for the Ontario Waste Management Corporation facility
- Review of plans for a Regional Environmental Lab
- Participation in Environmental Assessments.
- Review of the Region's sewage sludge management program.

EEAC has also been discussing sustainable development and the World Conservation Strategy. A slide show was produced and shown to Regional Council and carried on the local Cable T.V. Station. Regional Council has also requested EEAC to advise on the possibility of a Regional environmental award.

The most striking difference between the mandate and activities of the EEACs is in the area of development review. Waterloo and Halton EEACs are regularly involved in the review of development proposals in or adjacent to ESAs while Niagara EEAC is not. On the other hand, Niagara EEAC reviews some larger issues or proposals, like the OWMC or Niagara Escarpment Plan Amendments, which are not commonly addressed by the other EEACs. The basic issue of whether the mandate of EEACs is best served by concentrating on specific proposals which are subject to extensive staff review, or by raising and exploring broader issues received some discussion.

While some differences among EEACs surfaced, it was also apparent that some common issues related to mandate and priorities were being faced. Education is one area which all three EEACs recognize as important but are searching for appropriate ways to fulfill their mandates in this area.

Making the Process Work

Chaired by: Charlie Pryer (Niagara EEAC)
Panel: Debbie Ramsay (Halton EEAC)
Rick Brady (Niagara EEAC)
Frank Watty (Waterloo Staff)

Have EEACs been effective and what is required to make the process work? This is the question which was discussed in the third session. Consistency, demonstrated expertise, and credible information were initially suggested as three important factors in making the process work.

Both the Halton and Waterloo EEACs offered comments on the development review process. It was observed that there has been a turn around in the attitudes of the development industry towards EEAC participation. Not only are EEAC comments recognized as a part of the process, but have resulted in improved developments.

When participating in the development review process, it is important to provide input which is:

- expeditious, timely, and cost effective
- based on defensible information.

In this regard, Halton and Waterloo have compiled environmental data banks. Making this information available to developers establishes trust and credibility. It is also important for EEAC decisions to be seen as being consistent.

In assessing the effectiveness of the process, an important contrast was discussed. The Waterloo EEAC works in a relatively structured way while Niagara has a very flexible approach (Halton appears to be somewhere in between). As a result, the outcome of efforts of the Niagara EEAC is often less tangible or obvious. The comment was made that while Niagara EEAC may not always be consistent in procedure or format, it is fair and professional in the advice that it offers. This advice provides a technical view, but may also increase awareness or ensure that a particular issue or viewpoint is considered in the process.

As an actor in the process of promoting sound environmental and resource management, it was suggested that EEACs should be aware of:

- their ability (and obligation?) to take a broad, interdisciplinary perspective when reviewing proposals - as opposed to the compartmentalization of government agencies constrained by limited mandates.
- the need to educate their audience (community, political) and not be elitist.
- the importance of the landowner, both as a manager of land and an important source of information.

Most participants had a positive view of the process. EEAC participation was seen to be effective in varying degrees. However, several questions emerged and the response to these challenges will play a role in determining future prospects for EEACs.

- Are EEACs dealing with specific issues without having a broader picture of what is actually happening? Environmental monitoring may deserve a higher priority.
- What is the role of EEACs in education? Awareness needs to be increased to make the process work but the role of EEACs is not established. Once again, this is an area in which some participants advocated an expanded role with either the political or general community as the target.
- How should EEACs respond to the larger issues inherent in sustainable development? This is an area which goes beyond the traditional activities of some of the EEACs.

Fall Conference

Chaired by: David Miller (Niagara Staff)

The final session was dedicated to discussing a possible conference in the Fall. This conference would be co-sponsored by the EEACs but could be larger than the inter-EEAC meeting and include other groups or individuals. Niagara EEAC could act as host.

It was first established that the consensus at the meeting was that a follow-up conference in the Fall was an appropriate and worthwhile idea to pursue. Once it was agreed that efforts should be made to organize a conference in the Fall, attention was focussed on what the objective, target group and theme of the Fall conference should be.

The basic decision faced was should the conference be

- aimed at learning more about EEACs and the advisory process, possibly using some case studies or examining issues in more detail

OR

- aimed at a particular theme or topic.

During discussion of this question, a number of points were made:

- the conference should not be aimed just at EEACs but also at others with an interest. This could include government agencies, community groups, municipalities, and areas interested in forming advisory committees.
- it is important to have a theme if the conference is to attract any attention. Specific suggestions included Global Climate Change, Waste Management, Water Quality.
- it is necessary to put a 'human face' on the environment. This is a matter of survival and every individual should be contributing to the solution. This message should be the ultimate purpose or foundation of the conference.
- many of the topics and issues discussed relate to sustainable development. Think Globally and Act Locally has been suggested as a theme. This would lead to a broader environmental scope with the conference organized as a round table. It could focus on defining the term sustainable development at a community level and to explore how and which environmental group should 'speak for' environmental issues at this community level. It was also suggested that the leading economic issue is 'growth' and that it can be translated into environmental terms in this discussion.
- it is important to define exactly who the target group is. That will have a bearing on the theme of the conference.
- it is also important to consider logistics at an early stage.

While no consensus on these various views was reached, it was suggested that many of the objectives expressed were in fact compatible. As a starting point, it was suggested that:

- the conference continue to explore some of the common EEAC issues identified at the interEEAC meeting.

- a particular theme or topic be defined to act as a focus.
- the conference involve a broader group with a higher profile but at a scale that is manageable. Invitations to selected target groups may be one option.

In conclusion, it was agreed that the inter EEAC coordinating Committee should draft an initial proposal for consideration by each EEAC so that any necessary approvals can be obtained.

Prepared by,

David Miller

David Miller

1224B

#4

FILE NO.
LETTER NO.
JAN 02 1990
INF. MAIN
ENG. SERV.
ADMIN.
FILED BY
JR

December 27, 1989

A. Khan,
Senior Environmental Coordinator,
Public Works Canada,
4990 Yonge Street, 11th Floor,
Willowdale, Ontario.
M2N 6A6

Dear Mr. Khan,

Re: Comments on Hamilton Harbour Marina Expansion Concept

On December 19, 1989, we had the opportunity to attend the display on the proposal entitled: "Hamilton Harbour Marina Expansion Concept." At this time, there is not sufficient information on this proposal to make detailed comments on it. However, we understand that there will be an Initial Environmental Evaluation of the Concept under the federal Environmental Assessment and Review Process. To assist your tasks under this process, we are submitting our comments to you at this time. Our first concern is of a general nature with more specific concerns subsequently outlined.

1. The Hamilton Marina Expansion Concept as Another Example of the Incremental Planning Process for Hamilton Harbour

Who is going to take the responsibility to ensure there is a long term vision for the improvement and revitalization of the Harbour? Is it the Hamilton Harbour Commissioners? The Remedial Action Plan process? The Hamilton-Wentworth regional council? The City of Hamilton? Industry? The people of the communities bordering the bay? The response is simply that all of these sectors must be involved to arrive at a consensual, coordinated, and common vision for the bay.

However, despite the noble efforts of those that have worked long hours for improved harbour planning, the harbour is continuing to be developed in an incremental, marginally coordinated, piece-meal fashion. Indeed, the Harbour Marina Expansion Concept is another example that every agency and level of government wants to fulfil its own agenda without taking a holistic, ecosystem approach to harbour basin planning. There are many other examples, including the Waterfront development proposal, the Perimeter Road proposal, the Windermere basin development, and the Eastport development.

In our view, the Hamilton Harbour Remedial Action Plan (RAP) was designed to be a mechanism to initiate this long-term ecosystem planning process. However, the RAP has not taken a proactive role in commenting on harbour developments, especially land-use matters. We hope that the RAP will undertake more of this kind of role in the future.

The issue at this time is not whether these development proposals on their own should or should not be supported, but whether they fit into, or are a component of, an overall vision for the harbour - a vision that will benefit the widest range of community members for the longest period of time.

We submit that the Initial Environmental Evaluation take into consideration **all existing and proposed developments by all levels of government to ensure that all potential impacts of this development are taken into account, including the cumulative impacts. We further urge that this proposal be submitted to the Hamilton Harbour Remedial Action Plan for their views on the matter**. It is no longer acceptable to evaluate each proposal as if all other proposals did not exist - they do exist and must be factored into the assessment process.

2. Harbour-Filling

In approximate terms, one-quarter of the harbour has been reclaimed since the mid-1920s. The Marina Expansion Concept once again proposes more harbour- filling. How much harbour filling should be allowed? Who is keeping track of the amount of fill from this project together with Waterfront Park and Perimeter road proposals? Harbour-filling should only be allowed when no alternative is possible and even then harbour-filling should only be allowed in the most rarest of situations. The cumulative amounts of harbour-filling could be significant.

Further, what requirements will be in place to ensure that the fill used will be environmentally acceptable? In our view, assurances that the Concept will follow the Ministry of the Environment's guidelines on lakefilling is not necessarily sufficient since a more rigid and stringent regime may be required owing to the sensitivity of the harbour and past problems with fill in that locality.

We submit that the Initial Environmental Evaluation **should examine very carefully issues pertaining to harbour-filling and, in particular, the quality of fill required for the Marina Expansion Concept.**

3. Alteration of Current Flows and Sediment Accumulation

Will the structures proposed under this Concept alter the currents or water flows in the western part of harbour? How will this impact the proposed Waterfront Park? How will the flow from Cootes Paradise be affected? How will this proposal affect the sediment build-up on various parts of the bay basin? In our view, **effects on current flows and sediments accumulation are important considerations to be taken into account in the Initial Environmental Evaluation, especially in light of other proposed undertakings in that part of the harbour**.

4. Traffic

The Marina Expansion Concept will attract more people to the harbour. What impacts will this have on the adjacent neighbourhoods? Will the increased traffic and parking facilities hinder public access by those that will not use the marina? How will the access routes and parking facilities interface with other developments in the harbour area? We would suggest that these **issues be considered in the evaluation of this concept.**

We hope these comments will be useful to you in furtherance of your work. We would like to request copies of the initial environmental evaluation documentation when it becomes available.

Thank you for this opportunity to relay our initial concerns to you.

Yours very truly,

Paul Muldoon
Hamilton Environmental
Action Team (HEAT)
518 Dundurn St. S.
Hamilton, Ontario.
L8P 4L9
(416) 526-7361

Brian McHattie
Hamilton Naturalists' Club
Box 5182
Hamilton, Ontario.
L8S 4L3
(416) 627-1076

cc. Keith Rogers, Hamilton Harbour Remedial Action Plan
✓ Jack Ramsay, Secretary, Chairman's Advisory Committee on Environmental Issues

#5

THE REGIONAL MUNICIPALITY OF HAMILTON-WENTWORTH

Office of the Clerk
119 King Street West, 15th floor
Hamilton, Ontario

526-4154

Mailing Address:
P.O. Box 910, Hamilton, Ontario
L8N 3V9

FILE NO.
LETTER NO.
DEC 11 1989

Refer to File No
Attention of
Your file No

December 8, 1989

MEMO TO: J. Ramsay

FROM: M. A. Rallo

RE: Communication No. 9 - Council December 5, 1989

Regional Council at its meeting of December 5, 1989 referred Communication No. 9, correspondence from J. Pollock, MPP Hastings-Peterborough on zebra mussel contamination of municipal water supplies, to the Chairman's Advisory Committee on Environmental Issues.

Kindly ensure this item appears on the appropriate agenda.

M A Rallo

MAR/st
Attach.

JIM POLLOCK, M.P.P.
HASTINGS-PETERBOROUGH

Ontario

LEGISLATIVE ASSEMBLY

LEGISLATIVE OFFICE:
Queen's Park
Toronto, Ontario
M7A 1A2

416-965-4812

CONSTITUENCY OFFICES:

Box 531, 10 North
Stirling, Ontario K0K 3E0

613-395-3317
Zenith 42400

R.R. #7
Peterborough, Ontario
K9J 6X8

705-742-1993

November 21, 1989

Dear Head/Members of Council

After first being detected in Lake St. Clair in the summer of 1988 the Zebra Mussel (Dreissena Polymorpha) have now been found as far from the original site as the mouth of the Welland River in Lake Ontario and Dunkirk on the American side of Lake Erie. They are now found throughout Lake St. Clair with the highest density at the Detroit River confluence. Reports indicate that the Zebra has been found near Cornwall in the St. Lawrence River, Sturgeon Bay (Green Bay) in Lake Michigan and an unconfirmed report indicates samples have been taken near Duluth in Lake Superior.

To date the Zebra has been associated with fouling of water intakes, industrial equipment, boats, nets, marine engines, wells, piers, breakwalls and navigation buoys. Numerous water supply intakes in Ontario and the U.S. have been partially blocked causing great expense to clear, only to have them block again.

The most serious problems appear to be on the American side of Lake Erie. The municipal water intake pipe at Monroe, Michigan is 45% blocked and one unit at the thermal power plant in the same area has been shut down due to Zebra infestation. Likewise, Cleveland expects its four water intake pipes to be 60% blocked. Remedial work and pipe replacement costs will run $50 Million DOLLARS and $50-$100 MILLION DOLLARS respectively in these two cases.

In Ontario, fouling has also been very destructive. As early as last February many municipal water supplies had been partially blocked. West Lorne lost 25% of its intake capacity and Zebras were the cause of a 20% loss at Tilbury (in less than 2.5 months). From observations at the Union water supply, if a one inch layer forms on all inside surfaces from the crib to the treatment plant, then approximately 135 million to 270 million Zebras or 350 tons could present with the only means of removal being to scrap the Zebra from the inside of the pipes. Not only will municipalities be caused financial problems the Zebras were the cause of damage at the Ford casting plant in Windsor affecting a room size pump..

The potential effect on Great Lakes and the inland lakes in Ontario will be serious. Spawning shoals are being monitored for effect of the mussels on substrate condition. A sample of three reefs used by walleye in western Lake Erie were heavily encrusted by mussels this past summer. Zebra counts are as high as 30,000 per square metre on the reefs near Pelee Island. There are already reports of crayfish being completely bound by the Zebra and the native clams may become threatened.

The invasion of inland waters is very possible. The Zebra has not been found in inland lakes (YET!) but the main mode of transfer pleasure boats, will likely cause the colonization of at least the connecting waters such as the Trent-Severn System and Lake Simcoe. The potential exists for the introduction into major tributaries of the Great Lakes also. The disaster for commercial and sports fishing industry as well as the cost to municipalities and Ontario industry is just to high to calculate at this time.

This letter is meant to be a warning to you as municipal officials, put the pressure on your M.P.P s to find a Ministry to coordinate the effort of control over the Zebra. I personally suggest that the Ministry of Natural Resources be that Ministry.

If you have any additional information on the Zebra Mussels please send it to my Queen's Park office.

Yours truly,

Jim

Jim Pollock M.P.P.
Hastings-Peterborough
Progressive Conservative Critic
Natural Resources

RECEIVED
NOV 27 1989
REGIONAL CLERKS OFFICE

Niagara

#6

DPD 1568
July 28, 1982
File: EN:sen

Report to: Mr. Bell, Chairman and Members of the Planning and Development Committee

Mr. Campbell, Chairman and Members of Regional Council

Councillors:

The Establishment of An Ecological and Environmental Advisory Committee

At the annual meeting of the Federation of Ontario Naturalists in May 1982, the following resolution was passed:

> "that the Federation of Ontario Naturalists encourage the Regional Municipality of Niagara to accept the proposals of the Niagara Falls Nature Club, and Peninsula Field Naturalists Club toward the establishment of an Ecological and Environmental Advisory Committee to advise on matters concerning the environment."

A copy of the Federation of Ontario Naturalists letter is attached.

The Policy Plan provides for the formation of an Ecological and Environmental Advisory Committee (EEAC) in Policy 7.B.1 in the Natural Resource and Environmental Area section of the Policy Plan. The Public Works Committee has reviewed the Federation of Ontario Naturalists letter and supported the formation of such a committee. Their recommended members on the Committee are Councillors Griffiths and Sobol. Also, Public Works staff have expressed an interest in the committee as their Regional projects requiring environmental assessments might be reviewed by the EEAC committee.

The establishment of an EEAC committee was discussed by the Planning and Development Committee several years ago. The recent interest shown by local naturalists clubs and the Public Works Committee support the formation of an EEAC at this time. Furthermore the recent extending of environment assessment regulations to municipal undertakings lends support to the appropriateness of an environmentally oriented technical advisory committee such as an EEAC.

This report discusses the proposed membership for the EEAC and the type of policies and development proposals and applications that might be referred to the Committee. The Planning and Development Committee will normally refer topics to be considered by EEAC. However other standing committees such as Public Works could also refer topics to EEAC.

It is suggested that two representatives from the Public Works and Utilities and the Planning and Development Committees be appointed to EEAC. This four member group could then make recommendations to the Planning and Development Committee for membership from the community. Approximately 15 lay members are suggested. Each lay member should have a technical environmental background.

What is an EEAC Committee?

An Ecological and Environmental Advisory Committee is normally a technical advisory committee composed mainly of local technical people. In addition, there should also be membership from the Public Works and Planning Committees. Thus, it is similar in structure to the established Agricultural Subcommittee. It could provide a broad range of technical assistance to Regional Committees and Council on environmental matters.

The expected two main roles of an EEAC would be to contribute to the discussion on environmental policies in official plans and to comment on particular development proposals. Since the regulations of the Environmental Assessment Act, 1975 now apply to a variety of municipal undertakings it is timely that an EEAC be formed in Niagara to review municipal projects that may require environmental assessments. An EEAC committee can review environmental policies and development applications early in the established review processes when changes to reduce environmental effects are more easily accommodated. This may avoid a delay in implementing a policy or a development because of inadvertently overlooking an environmental consequence.

EEAC's In Other Regions

The Regions of Waterloo and Halton have EEAC committees. Both have been of assistance in providing technical information on environmental matters. Based on the experience of these two EEAC's, other Regional Municipalities are considering the establishment of similar committees. The Regions of Hamilton-Wentworth and Ottawa-Carleton are both investigating the formation of EEAC's.

The two established EEAC's are composed of approximately 15 technical advisors from their Regions with one or two Regional Councillors. A planning staff member is the recording secretary and provides agendas and minutes of meetings. These committees have provided technical assistance to the Regional Planning Committees on a variety of environmental matters. The Planning Committees refer proposed policies and development proposals that may have an environmental effect to the EEAC Committee. EEAC reviews the proposals and provides technical comments to the Planning Committee for their consideration. This procedure has proven to be an efficient and effective method to provide technical, environmental information to the Planning Committees.

Topics That May Be Considered By An EEAC

An EEAC would be a technical subcommittee of the Planning and Development Committee. Any topic to be considered by the EEAC is referred to the committee by the Planning and Development Committee. Other Regional Standing Committees also may wish to refer topics to EEAC from time to time. For example, the Public Works Committee may wish to have technical input from the EEAC on regional projects that may require an environmental assessment.

The following are some examples of policies and development proposals that could be referred to EEAC by the Planning or Public Works Committees.

- Environmental policies in the Regional Policy Plan and local Official Plans.
- Policy Plan and local Official Plan amendments that may have an environmental effect.
- Municipal or regional projects that may require an environmental assessment under the expanded municipal regulations under the Environmental Assessment Act, 1975.
- Environmental assessments completed under the federal Environmental Assessment Review Process or the provincial Environmental Assessment Act, 1975.
- Assistance in the identification and evaluation of Environmentally Sensitive Areas.
- Development proposals that may have a significant environmental effect.
- Development proposals in or near Environmentally Sensitive Areas.

The Niagara EEAC

The Niagara EEAC might be established similarly to the two existing committees in the Regions of Waterloo and Halton. In both cases local people with a wide variety of technical backgrounds such as hydrologists, botanists, aquatic biologists, etc. are members of the committee. Regional Councillors and planning staff are also represented. Planning staff are not members of the committee but assist the committee by preparing agendas and minutes of the meetings.

Only Planning Committee members are represented on the two existing EEACs. The addition of Public Works Committee members would be unique. However, there are several advantages to having Councillors from both Planning and Public Works Committees on EEAC. While the Planning Committee has been involved with environmental policies and related development proposals, the Public Works Committee may expect more involvement now that certain municipal projects require environmental assessments. Representation on EEAC should enable possible municipal projects to obtain early consideration when the potential for changes is greater and to make every effort to avoid the possibility of unnecessary hearing delays as the start of construction draws closer.

It is proposed that two members be appointed to EEAC from both the Public Works and Planning Committees. These members then would recommend how lay members would be appointed to EEAC. The final appointment of lay members to EEAC would be done by Regional Council following recommendations from the Planning and Development Committee. The lay people on EEAC should have a wide range of technical environmental backgrounds. Approximately 15 lay people serve each of the existing EEACs. Staff representatives from both Public Works and Planning Departments should attend.

One of the first responsibilities of EEAC is the development of terms of reference for the sub-committee. Examples in this report of the types of policies and development proposals that may be referred to EEAC should be the basis of the terms of reference but the sub-committee may wish to add other suggestions. Once this is completed, approval would be required by the Planning and Development Committee and Regional Council.

Conclusions

The formation of an EEAC as a sub-committee of the Planning and Development Committee is provided for in the Policy Plan. A recent interest in this committee by local naturalists clubs and changes in the Environmental Assessment Act to require environment assessments for some municipal undertakings supports the

Moved by Mr. K. MacDonald
Seconded by Mr. R. Secord

That a named non-voting alternate could be sent by a member.

Carried

Any EEAC member that would like to send an alternate from time to time should submit the name, address and phone number of their alternate to the EEAC secretary, Richard Brady in the Planning Department.

Replacement of Members

The Committee discussed various means to replace members that resign from the Committee before their term of office has been completed.

Moved by Dr. B. Krushelnicki
Seconded by Mr. K. MacDonald

That a recruitment committee be formed, when needed, to propose the procedure for obtaining new lay members to EEAC to replace members that resign during a term of office.

Carried

Any new member will be appointed by Regional Council following review by the Planning and Development Committee.

The Committee had some discussion on the number of meetings a member could miss before the Committee would request an explanation. It was agreed that this matter could be referred to a subcommittee at a later date if necessary.

Frequency of Meetings

The frequency of meetings was discussed by the Committee. Since this is a new committee, the work load is somewhat unknown at this time.

Moved by Dr. J. Jackson
Seconded by Dr. M. Dickman

That the Committee would meet at the "Call of the Chair" or approximately every two months.

Carried

Meeting Time

The Thursday, 7:30 p.m. time for the Committee meetings was agreed to by EEAC. It was recognized that the meeting would not be called on a Thursday that was scheduled for a Regional Council meeting.

Term of Office

The term of office of lay members was discussed by the Committee. It was agreed that the lay members would remain this term of Regional Council. However the Committee expressed some interest in re-examining this issue at a later date.

Terms of Reference

The Committee had considerable discussion on this topic. For the most part the discussion centered around two types of work that members of the Committee want to be discussed at upcoming meetings.

- Referrals from Standing Committees. This was described as reactive involvement.
- Bringing forth their environmental concerns. This was described as creative involvement.

Different members tended to favour one type of work over the other. While it was generally agreed that both would need to be considered by the Committee, the importance of working on referrals from Regional Council and Standing Committees was recognized. In addition, the Committee may wish to bring other items to the attention of the Standing Committees.

Moved by Mr. K. MacDonald
Seconded by Mr. C. Pryer

> That as a statement of the general philosophy for a terms of reference, the "Topics that May be Considered by an EEAC" in the memo from planning staff be adopted.

Carried

A copy of this memo is attached.

Moved by Dr. F. Banfield
Seconded by Dr. B. Krushelnicki

> That the Committee be able to bring to Regional Council's attention environmental concerns that are considered important by EEAC.

Carried

Moved by Mr. K. MacDonald
Seconded by Mr. C. Pryer

> That a subcommittee be established to prepare a list of environmental topics and to identify priorities for the consideration of EEAC and subsequently by Regional Council for the purpose of developing a work program for EEAC and various subcommittees which may be established as a result.

formation of an EEAC. Our Public Works Committee has endorsed the creation of an EEAC and has chosen Councillors Griffiths and Sobol as representatives. Planning staff feel that an EEAC would be of assistance in reviewing environmental policies and development proposals. One additional benefit of an EEAC committee is that it provides an opportunity for individuals to participate in and become aware of the responsibilities and services of Regional Niagara.

Recommendations:

1. That the Planning and Development Committee establish an Ecological and Environmental Advisory Committee (EEAC).
2. That the Public Works and Utilities Committee and the Planning and Development Committee each appoint two of their members to the Ecological and Environmental Advisory Committee.
3. That the four Regional Councillors appointed to EEAC be authorized to recommend the method for appointing approximately 15 lay members. These lay members should have technical environmental backgrounds that would be of assistance in reviewing environmental policies and development proposals.
4. That once the lay members have been appointed to EEAC by Regional Council, that the EEAC prepare draft terms of reference using the topics outlined in this report for the consideration of the Planning and Development Committee and Regional Council.

Prepared by

Richard F. Brady

Richard F. Brady
Planner

Corwin T. Cambray

Corwin T. Cambray
Manager, Policy Planning

Respectfully submitted

Alan Veale

Alan Veale
Planning Director

RFB/CTC/jm

3 1061

From Minutes of Regional Niagara's EEAC for April 14, 1983 - The Initial Organizational Meeting of the Committee.

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4. Discussion on Membership, Staff Liaison and Terms of Reference

Alternates

The Committee discussed the idea of an alternate for a member that could not attend a meeting. Both pros and cons of an alternate were discussed. It was mentioned that since meetings were open anyone could attend.

The following members volunteered for the Environmental Issues subcommittee:

M. Howe
K. MacDonald
S. Pettit
C. Pryer

Any environmental topics that EEAC members wish to be considered by this subcommittee were to be sent to the EEAC secretary by April 28th, 1983.

5. Discussion of further Work for EEAC

A discussion of further work for EEAC was included with the discussion of Terms of Reference. Both matters are inter-related and somewhat difficult to separate. Once the subcommittee on Environmental Issues brings a report to EEAC, further discussion of upcoming work load will be held.

6. Other Business

On April 7, 1983, Regional Council referred a resolution to EEAC on the matter of disposal of hazardous waste. The resolution is attached to these minutes.

The following members volunteered for the Ontario Waste Management Corporation subcommittee.

A. Besenyo
L. Daniels
M. Dickman
R. Durdan
R. Durham
S. Pettit

This subcommittee will research and prepare a report for EEAC on the resolution. After discussion by EEAC a response to the resolution will be submitted to Regional Council through the Planning and Development Committee.

ADJOURNMENT

The Committee adjourned at 10:00 p.m. The next meeting will be held at the call of the chair.

Peter Sobol
Chairman

Richard F. Brady
Planner

RFB/jm

Regional NIAGARA

ECOLOGICAL AND ENVIRONMENTAL ADVISORY COMMITTEE

Highlights of Activities

1986 - 1988

Ontario Waste Management Corporation (OWMC)

- EEAC reviewed and accepted Regional Niagara's strategy on the OWMC.

- The Waste Management Subcommittee reviewed and commented on the topics Regional Niagara proposed to investigate respecting the OWMC.

- At EEAC's recommendation, meetings of the OWMC Steering Committee were opened to the public.

- In 1986 the Township of West Lincoln proposed that it coordinate the municipal response to OWMC and act on behalf of the Region. EEAC recommended that the coordination of the concerns of the citizens of the Region be represented by the Region and made a presentation to Regional Council. Council decided to continue with its own review of OWMC's plans.

- At EEAC's recommendation the OWMC Steering Committee received a presentation from Citizens for Modern Waste Management.

- The Waste Management Subcommittee reviewed and commented on the following components of OWMC's plans:

  1) Air emissions and atmospheric dispersion.

  2) Incinerator design and operations.

  3) Geology, hydrogeology, and geotechnics.

  4) Solidification of treated waste.

- The Subcommittee secured the following information:

  1) Design and operations of the Biebesheim incinerator, including air emissions data.

  2) Technical protocols for investigations of the West Lincoln site.

  3) Draft borehole logs from Phase 4B drilling at the site.

4) OWMC's tests of clay permeability.

5) Plans for ground water monitoring at the site.

Biomedical Wastes

- The Waste Management Subcommittee has been investigating the management of biomedical wastes in Niagara.

Policy Plan Review

- The Natural Areas Subcommittee submitted a brief to the public meeting on the Five Year Review of the Regional Policy Plan. The brief urged that a review of the environmental policies be included. This review is now underway.
- The Subcommittee is to participate in this review and has done some preliminary work.

Planning Applications

(i) Thorold Auto Wreckers

- The Natural Areas Subcommittee reviewed plans for expansion of Thorold Auto Wreckers. It concluded that it could not see an obvious role for EEAC to play in the process at that point in time.

(ii) Lockhart Drive

- The City of St. Catharines had made application to the Niagara Escarpment Commission to have these lands designated as Escarpment Natural. EEAC recommended that the City's application be supported by the Region. After a lengthy period of discussion and review Regional Council decided not to support the application.

Sludge Management

- The Water Technology Subcommittee has reviewed various aspects of the Region's sewage sludge management program including:
  - The Sludge Investigation Program update study.
  - Sludge hauling and disposal.
  - The Class EA for a new sludge transfer site in Welland.

- The Subcommittee recommended that a staff position be created to administer this program. This recommendation has been taken up by Public Works staff.
- Members of the Subcommittee visited the labs of Pollutech, who were involved in the Region's sludge safety study, and offered comments.
- The Subcommittee received a presentation on the search for a new sludge transfer site to serve the Welland plant.

Water Quality

- The Water Technology Subcommittee was given a tour of the Trace Organics Removal Project at the Niagara Falls Water Treatment Plant. A number of questions were directed to MOE.
- The Subcommittee reviewed and commented on a report on carcinogens in drinking water.

Regional Laboratory Facilities

- Public Works staff made a presentation to EEAC on plans for a new laboratory to serve the Region's water supply and pollution control programs. Committee members provided a number of comments and suggestions.

World Conservation Strategy

- The Natural Areas Subcommittee prepared a report on the World Conservation Strategy and its relevance to Niagara.
- The Subcommittee also produced a slide show on the World Conservation Strategy. The slide show has been shown to Regional Council as well as other groups.

Workshop on Environmental Security in Niagara

- The Natural Areas Subcommittee sponsored this workshop which brought together individuals with a wide range of interests. A number of important themes emerged from the workshop. A report on the proceedings was submitted to Planning Committee. This report will be used in the Policy Plan Review.

Don Campbell

Don Campbell
Planner

0812B

Revised in accordance with amendments by Regional Council, February 14, 1989.

NIAGARA

DPD 2438
February 8, 1989
File: A.34.7

Report to: Chairman and Members of the
Planning and Development Committee

Chairman and Members of Regional Council

Councillors:

Appointments to the Ecological and Environmental Advisory Committee (EEAC), 1989-1991

The Ecological and Environmental Advisory Committee (EEAC) is made up of 6 Regional Councillors plus 15 members appointed from the general public. The Regional Councillors who are to serve on EEAC for the current term of Council have already been appointed.* This report deals with the appointment of members of the public.

EEAC's role is to provide technical advice to Regional Council on environmental matters. Thus the knowledge and expertise of the members of the public appointed to the Committee is particularly important.

Early in January advertisements were placed in the three daily newspapers in the Region inviting interested members of the public to apply for appointment to the Committee. In addition, members of EEAC during the last term of Council were contacted directly and asked to indicate whether they wished to be considered for reappointment. In total, over 60 applications were received. This represents a marked increase over previous years.

The Councillors who have been appointed to EEAC met on February 6, 1989 to review the applications and determine which candidates should be recommended for appointment to the Committee. Each Councillor had reviewed the applications beforehand and developed a list of 15 candidates. In doing so, the Councillors had considered the following factors: the candidate's knowledge or expertise; community involvement; environmental interests; occupation; and place of residence. Councillor Dickson, who was unable to attend the meeting, had forwarded his list to staff earlier. At the meeting these lists were tallied to identify the candidates receiving the greatest number of votes. After reviewing and discussing these candidates the Councillors arrived at a consensus on the individuals to be recommended for appointment to the Committee. Appendix 1 lists the individuals recommended for appointment, providing background information on each one.

---

* The Councillors who have been appointed to EEAC are H. Clement; M.R. Collins; F. Dickson; R. Dobrucki; E. Lancaster; and S. Pettit.

Overall the Councillors were very much impressed with the quality of the applicants and the level of interest in and enthusiasm for EEAC's activities. It was recognized that many of those who had not been selected nevertheless still had much to contribute. It was felt that it would be unfortunate if Regional Niagara did not take the opportunity to involve these individuals in EEAC's activities. Accordingly, it was concluded that those candidates who had not been selected should be invited to work with the subcommittees of EEAC on specific topics on an informal basis.

It is proposed that the first meeting of the new EEAC be held on Thursday, March 9, 1989 at 7:30 p.m.

Recommendation

1. That this report be received and that the following individuals be appointed to serve on the Ecological and Environmental Advisory Committee for the 1989 - 1991 term of Council:

   Mr. Eric Bergenstein

   Mr. V. A. Benvenuti; Mr. Richard Brady; Prof. Ian Brindle; Mr. Ron Caston; Prof. Michael Dickman; Mr. Mark Diffin; Dr. Ray Durham; Mr. Gregory Faraday; Mrs. Phyllis Kerkhoven; Dr. Edgar Lemon; ~~Prof. John Luik;~~ Mr. Charlie Pryer; Mr. Randall Secord; Mr. Allan Veall; Mr. Warren Wiley.

   *See Note below.

Prepared by,

Don Campbell

Don Campbell
Planner

Corwin T. Cambray
Manager, Policy Planning

0962B

Respectfully submitted,

Alan Veale

Alan Veale
Planning Director

Note: Professor Luik's name was removed from the list of appointees at his request. Eric Bergenstein was appointed in his place.

Ap x I

Candidates Selected for Appointment to EEAC

Name	Area of Expertise	Community Involvement	Environmental Interests	Occupation	Place of Residence
V. Benvenuti	Recycling Waste Management	Minister of Environment's Recycling Advisory Committee	Recycling Waste Management	Director, Planning and Administration, Quebec and Ontario Paper Company Ltd.	St. Catharines
R. Brady	Land Use/Environmental Planning and Environmental Assessment	Niagara Falls Nature Club; Friends of the Wainfleet Bog; Ontario Society for Environmental Management	General - Natural Areas, Conservation, Pollution	Environmental Planner, Proctor & Redfern	Niagara Falls
I. Brindle *	Analytical Chemistry	EEAC, NET Force, Smithville PCB Clean-up, Grimsby Landfill EA	Waste Management, Hazardous Wastes, Water Quality, Sewage Treatment	Assistant Professor of Chemistry, Brock University	St. Catharines
R. Caston	Chemistry, Effluent Monitoring	----	Waste Management and other Environmental Issues	Senior Laboratory Technician, Cyanamid Canada Ltd	Niagara Falls
M. Dickman *	Aquatic Biology	EEAC; NET Force; Technical Advisory Committee NPCA	General - Natural Areas, Waste Manage- Management, Water Pollution, Sewage Treatment	Professor of Biology, Brock University	St. Catharines

* Member of EEAC, 1986 - 1988

Appendix 1

Candidates Selected for Appointment to EEAC

Name	Area of Expertise	Community Involvement	Environmental Interests	Occupation	Place of Residence
M. Diffin	Biology, Chemistry Fishery Habitat Wetland Use	----	Pollution, Preserva- of Wildlife	Research Analyst, The Port Colborne-Wainfleet Economic Resource Centre (Gravelly Bay Project)	Welland
R. Durham *	Chemistry, Environmental Radioactivity, Environmental Impact Assessment	NET Force, EEAC	Water Quality, Sewage Treatment	Environment Canada	St. Catharines
G. Faraday	Resource Management (lands and forests)	----	General	Worked In Chemical Industry; Resource Management, Ontario Ministry of Natural Resources	Fort Erie
P. Kerkhoven *	Prepared Briefs on Environmental Problems	Environment Committee, St. Catharines Local Council of Women	General	Clerk, Regional Health Services	St. Catharines
E. Lemon	Environmental Physics; Chemistry, Solar Energy; Pesticides	Secretary, NET Force	Pollution Waste Management	Retired Professor of Environmental Physics, College of Agriculture, Cornell University	Niagara-on-the-Lake
J. Luik	Environmental Ethics	----	General	Assistant Professor of Philosophy, Brock University	St. Catharines

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Candidates Selected for Appointment to EEAC

Name	Area of Expertise	Community Involvement	Environmental Interests	Occupation	Place of Residence
C. Pryer *	Natural History	Federation of Ontario Naturalists, Niagara Falls Nature Club, EEAC, other groups	General - Conservation, Natural Areas Education, Pollution	Insurance Agent	St. Catharines
R. Secord *	Geology, Hydrogeology	EEAC	Waste Management, Sewage Treatment, Water Quality and Treatment	Engineering Technologist, McGlone & Assoc.	Ridgeville
A. Veall *	Natural History, Physics	Niagara Falls Nature Club, EEAC	General - Natural History, Conservation	High School Principal (Retired)	Niagara Falls
W. Wiley	Agriculture, Land Use Planning	Niagara North Federation of Agriculture, Former Regional Councillor	General - but especially environmental matters related to agriculture	Farmer	St. Catharines

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#7

Minister of the Environment
CANADA
Ministre de l'Environnement

Le 8 décembre/
December 8, 1989

Madame, Monsieur,

Les Canadiens se préoccupent plus que jamais de la qualité de leur environnement.

Dans le but de rendre hommage à des personnes qui ont oeuvré d'une façon exceptionnelle à la protection et à la restauration de leur milieu naturel, Environnement Canada a institué les **prix d'excellence environnementale**.

Je vous invite donc à prendre connaissance du dépliant ci-joint et à nous faire parvenir vos propositions de candidature.

Dear Sir/Madam:

More than ever before, Canadians are concerned about the quality of the environment.

Environment Canada has established the **Environmental Achievement Awards** in order to recognize Canadians from all walks of life who have made outstanding efforts to protect and restore our natural surroundings.

I hope that you will submit a nomination.

Lucien Bouchard

p.j./
Encl.

Ottawa, Canada K1A 0H3

The Environmental Achievement Awards

Environment Canada is offering Environmental Achievement Awards in six categories to recognize the efforts and commitment of Canadians from all walks of life in protecting and restoring our world.

An independent advisory body, the Canadian Environmental Advisory Council, will select the winners. The awards will be presented during Environment Week, June 3-9, 1990.

One of the categories is:

The Environmental Achievement Award for Environmental Leadership by a Municipality

This award recognizes an innovative and/or exemplary environmental policy, project or activity by a municipality.

Eligibility: Any Canadian regional government or municipality. The nomination should outline the type of policy, project or activity and identify the benefits to the environment.

Deadline for submitting nominations: Submissions must be postmarked on or before February 15, 1990.

For further information and nomination forms, please contact:

Inquiry Centre
Environment Canada
6th Floor
Place Vincent Massey
351 St. Joseph Boulevard
Hull, Quebec
K1A 0H3

Telephone: (819) 997-2800

Environment Canada Environnement Canada

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The Environmental Achievement Awards

Recognizing the achievements and dedication of Canadians in protecting and restoring our environment

The health of this generation, of future Canadians and of the planet itself depends on us.

Now, more than ever before, the environment is everyone's concern: virtually all Canadians believe we must all take personal responsibility and action if our world is to survive. Each of us – governments, corporations, communities, individuals – can play a part in assuring a healthy environment.

The Environmental Achievement Awards celebrate the efforts and commitment of Canadians from all walks of life who work to protect and restore our environment.

Nominations are invited in a wide range of categories. An independent advisory body, the Canadian Environmental Advisory Council, will select the winners. The 1990 awards ceremony will take place during Environment Week, June 3-9. Please join us in recognizing the men and women who make Canada – and the world – a better place to live.

Lucien Bouchard
Minister of the Environment

Categories

Environmental Achievement Awards will be presented in six categories:

1 Non-profit Organization

This award is for a non-government, non-profit group that has made an outstanding contribution to the protection of Canada's environment. The contribution may be a long-term, ongoing effort or a single, recent accomplishment. It may take the form of increased public awareness or the promoting of a particular cause.

Eligibility: Any Canadian organization, or Canadian branch of an international organization, that is a non-government, non-profit group and that (a) focusses on conservation, wildlife, energy issues, toxic chemicals, or any other concern central to improved environmental quality, or (b) has developed a program that deals with an environment-related topic.

The 1989 award-winner was World Wildlife Fund Canada, which has supported 900 conservation projects, worth $500 million, in Canada and around the world since its founding in 1967.

2 Outstanding Communications for Environmental Awareness

This award is for an author, journalist, broadcaster or film-maker who is a Canadian resident and whose work has significantly broadened Canadians' awareness of environmental issues. The award-winner will have contributed to increased knowledge, concern, commitment and/or hope for the environment.

Eligibility: This category is open to a professional communicator in any medium.

The 1989 award-winner was Annabel Slaight, President of the Young Naturalist Foundation, co-founder of *OWL Magazine* and executive producer of 11 OWL Discovery Films for children.

3 Corporate Environmental Leadership

This award recognizes innovative and/or exemplary environmental conduct by a Canadian corporation, institution or association – industrial or other. The winner will hav shown that environmental concerns can be reflected in economic decisions, as urged by the World Commission on Environment and Development, and by Canada's Task Force on Environment and Economy.

Eligibility: The nominee must be a corporate entity (not a municipality or charitable organization). Crown corporations are also eligible. The nomination should identify how the company in question has protected the environment or conserved natural resources.

The 1989 award-winner was Mohawk Oil Co. Ltd. of Burnaby, British Columbia, which collects and recycles more than 18 million litres of used oil annually.

4 Lifetime Achievement

This award is given to an individual Canadian whose lifetime dedication to the environment is a source of inspiration.

Eligibility: Any individual Canadian. The nomination should describe the person's work, focussing on his or her motivation and scope of activity. Both successes an failures should be cited.

The 1989 award-winner was Dr. Pierre Dansereau, a pioneer in global ecological science who has spent more than 50 years working for increased environmental awareness.

Environment Environnement

5 Environmental Leadership by a Municipality

This award recognizes an innovative and/or exemplary environmental policy, project or activity by a municipality.

Eligibility: Any Canadian regional government or municipality. The nomination should outline the type of policy, project or activity and identify the benefits to the environment.

The 1989 award-winner was the City of Kitchener, Ontario, for its "blue box" program to recycle bottles, cans and newspapers.

6 Environmental Science Fair Project

Environment Canada works with the Youth Science Foundation to select the best environment-related science fair project across the country. Nominations are, therefore, not required for this category.

The 1989 award-winners were Heather Meredith and Melissa Thompson, Grade 8 students at Queenston Drive Public School in Mississauga, Ontario, for a project on composting.

Deadline for Submitting Nominations

Nominations must be postmarked on or before February 15, 1990.

Acknowledgement of Nominations

An acknowledgement will be sent to all those who submit a nomination form.

Further Information

Environment Canada appreciates your interest in the conservation and protection of the environment. We encourage you to make copies of this material and send them to other interested organizations.

Please send nomination forms and requests for additional information to:

Inquiry Centre
Environment Canada
6th Floor
"Place Vincent Massey
351 St. Joseph Boulevard
Hull, Quebec
K1A 0H3

Telephone: [illegible] 997-2800

Nomination Form for Environmental Achievement Awards

I wish to nominate:

Name ____________________

Organization ____________________

Address ____________________

Telephone ____________________

Category

Municipality ☐
Communications ☐
Non-profit Organization ☐
Corporate ☐
Lifetime Achievement ☐

Why I think ____________________ deserves the Environmental Achievement Award (200 words or less; please use a separate page).

Nominators are free to enclose additional materials (newspaper clippings, letters of support, magazine articles, photographs, etc.).

This nomination submitted by:

Name ____________________

Organization ____________________

Address ____________________

Telephone ____________________

Relationship to Nominee ____________________

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The Impact of Increased Recycle Rates on Markets in Florida

8

Edwin A. Korzun, N. Thomas Stephens and Howell H. Heck
Florida Institute of Technology
Melbourne, Florida

The State of Florida passed The Florida Solid Waste Management Act of 1988 mandating that county recycling programs be initiated by July 1, 1989. The legislation further expressed the goal that, at a minimum, recycling efforts reduce the amount of solid waste requiring final disposal or resource recovery by 30 percent by the end of 1994. This study was performed to determine the impact on recycle markets when the amounts of materials recycled from the municipal solid waste stream are increased by 30 percent in Florida.

The composition of the municipal waste stream was quantified in terms of the amounts of paper, plastic, metals, glass, and rubber. The effect of a 30 percent increase in the recycle rate of each class of material was calculated and compared to existing recycle rates in the State of Florida. It was determined that there are few capacity constraints on the increase in recycle rates for aluminum, steel (i.e., tin cans), and color separated glass. There are, however, serious constraints on increasing recycle rates for paper, plastics and rubber tires.

The State of Florida passed the Florida Solid Waste Management Act of 1988[1] mandating that counties initiate recycling programs by July 1, 1989. County governments were encouraged to establish cooperative arrangements with municipalities for the implementation of the recycling programs. Local governments are encouraged to separate all plastics and metals, and all grades of paper for recycling prior to final disposal of materials in the waste stream. An overall goal was established that the amount of solid waste requiring landfilling or resource recovery would be reduced by 30 percent through recycle efforts by 1994. The increase in the amount of material available for recycle has the potential of seriously impacting the existing markets for recycled materials in Florida.

It is the purpose of this study to estimate the impact on recycle markets that may be created by a large increase in materials becoming available for recycle by newly created county and municipal recycle programs. It is anticipated that this will result in the recycling of those materials in the municipal solid waste stream that are most amenable to source separation by homeowners and small businesses.

Approach

Generally, two methods may be used to estimate the quantities of the various components of municipal solid waste. The composition may be determined by sampling, sorting, and weighing the actual components of the heterogeneous mixture of municipal solid waste. This method has some disadvantages: many of the materials may only be identified by generic type in the "as-received" condition; materials may be highly site specific; and there is a high degree of sample variability due to the nature of the waste. The second method uses a materials flow approach with adjustments for numerous factors such as imports, exports, and diversion to long term use. This latter method has been used by Franklin Associates Ltd. to characterize municipal solid waste in the United States.[2] This method has an advantage over sorting techniques since the various specific categories may be determined more readily than is the case when attempting to sort a heterogeneous mixture of as-received mixed municipal solid waste, which may already have undergone considerable degradation from the time of on-site generation and storage.

For comparison, the composition of solid waste received at Brevard County, Florida landfills was determined by sorting and weighing components. The Brevard County, Florida data is based on the amount of solid waste received and weighed at the county landfills. At these locations relatively inert individual wastes, construction, demolition, and land clearing wastes are treated and weighed separately and classified as Class III waste for management purposes. The balance of waste received and weighed at the landfill represents the municipal solid waste portion of the total waste stream and is designated Class I waste. The daily receipts of each type of waste received during the year 1986 were compiled and the annual totals determined.

The Brevard County composition study sampled a total of 41 collection vehicles during a two-week period in the summer and another two-week period in the winter. Municipal waste collection vehicles were selected to represent each day of collection and were randomly selected throughout the day as they arrived at the unloading floor. The selected collection vehicle was unloaded on the concrete receiving floor and a bucket loader used to sample about one fourth of the load. Samples were initially quartered using the bucket loader. This was followed by manual emptying of plastic garbage

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Table II. Percent and quantities of subject materials entering the waste stream in Florida.

Materials	Percent[a]	Tons (thous.)/yr.
Paper products		
Newspapers	8.0	679
Books and magazines	3.0	254
Office papers	3.9	331
Commercial printing	2.3	195
Other nonpackaging paper	5.4	458
Corrugated containers	12.3	1044
Other paperboard	3.4	289
Paper packaging	2.7	229
Totals	44.5	3479
Glass		
Beer and soft drink containers	3.5	297
Other glass containers	4.0	339
Totals	7.5	636
Steel		
Beer and soft drink cans	0.1	8.5
Food cans	1.1	93.4
Other steel packaging	0.6	51.0
Totals	1.8	152.9
Aluminum		
Beer and soft drink cans	0.8	67.9
Other aluminum packaging	0.3	25.5
Totals	1.1	93.4
Plastics		
Plastic containers	1.8	153
Other plastic packaging	1.8	153
Totals	3.6	306
Rubber tires	1.1	93.4
Totals	60	4761

[a] Source: Reference 2.

bags, further quartering to about 100 pounds, and final sorting and weighing the as-received components by type.

It was determined that the total per capita generation rate for all waste materials delivered to the landfills was 8.48 lbs per capita per day of which 3.86 lbs per person per day was considered to be municipal solid waste (Korzun, 1988).[3] This is 7.8 percent higher than the Franklin estimate of 3.58 lbs per person per day during 1986. The somewhat higher estimate for Brevard County is believed to result from the impact of wastes generated by unaccounted tourists visiting the region during the winter period and normal statistical variability in sampling a heterogeneous material.

The results of the Brevard composition study were then compared to the totals of subcategories from the Franklin estimates containing those elements. The results of this comparison are shown in Table I. The close relationship with the results of the Franklin municipal waste estimates on a broad basis is considered to indicate that the Franklin subcategories would also be suitable for estimating the most easily recyclable subcategories in the municipal waste stream.

During 1987 Florida had a resident population estimated at slightly over 12 million persons (according to the U.S. Department of Commerce, 1987).[4] From 1980 to 1987 the population increased at an average rate of 325,000 residents per annum and has maintained this average for the past two years. It was projected on that basis that during the period when recycle programs are coming to full capacity so as to meet the 1994 goal of 30 percent recycle that there will be an average population of about 13 million residents in Florida. This population estimate was used to estimate the total quantity of municipal solid waste that would be generated. This provided an estimate of 8.49 million tons per year based on the Franklin[2] national average of 9.15 million tons per year based on local data. Considering the wide diversity in the urban/rural population mix in Florida it was considered that the broader based Franklin data would be more representative of statewide conditions than data from one locality.

Materials Available for Recycle

The materials considered most readily available in the municipal solid waste stream for recycle have been selected on the basis of their ease of identification and removal by an individual, either in a home or business environment. Materials such as paper products, beverage and food containers, packaging, and tires are readily available to an interested and motivated public and can be expected to be among the first to impact recycle markets. Table II shows the quantities of the subject materials types entering the waste stream, using 1986 as the base year and 13 million as the population. The percentage for subcategories is from the Franklin data.[2]

Table I. Comparison of Franklin Associates Ltd. Estimates of selected components in municipal solid waste and measured composition in Brevard County, Florida for the year 1986.

Materials	Percent	Percent as received		
	Gross discards[a]	Mean	S.D.	Range
Paper products	44.5	45.5	7.9	33–54
Glass containers	7.5	5.4	1.6	3–8
Steel cans	2.2	2.1	1.4	1–4
Aluminum cans & packaging	1.1	1.5	0.9	0.2–4
All plastics	7.3	8.6	3.1	4–12

[a] Source: Reference 2.
S.D. = Standard deviation.

Table III compares the current recycle levels in Florida to the net available materials for recycle in the solid waste stream. The total of available materials is reduced by the amounts currently being recycled to provide an estimate of the material remaining in the waste stream. This is considered to represent the amounts remaining available for increased levels of recycle.

The categories of paper, glass, and plastic represent the largest potential sources of material available for recycle. Recycle levels are low in all catego-

Table III. Current recycle levels in Florida compared to net available materials in the solid waste stream, tons per year.

Material	Current recycle[a]	Total avail.	Net avail.	% avail.
Paper	435,000	3,479,000	3,044,000	87.5
Glass (containers)	29,000	636,000	607,000	95.4
Steel (Tin plate & res. recov.)	10,000	153,000	143,000	93.5
Aluminum (containers)	24,000	93,000	69,000	74.2
Plastic	3,000	306,000	303,000	99.0
Rubber tires	240	93,000	92,700	99.7
Totals	501,240	4,667,000	4,166,000	89.3

[a] Source: Reference 5.

ries, providing considerable material availability in each category. It is reasonable to conclude that a goal to increase recycle by 30 percent will not encounter limitations based on material availability in any of the categories considered.

Effect on Recycle Markets of a Thirty-percent Increase in Recyclable Material Availability

It is assumed for this study that recycling will increase by 30 percent in Florida by 1994. The communities and counties will recover recyclable material by either homeowner source separation or by material recovery facilities. The materials available will be those found randomly in the municipal waste stream and the selection process will be considered to be random for the categories of paper, glass, steel, aluminum, and plastics. Should this occur, the amount of material available to the recycle markets may be estimated to increase by an amount equal to 30 percent of the material now available in the municipal waste stream.

Table IV provides an estimate of the increases in materials tonnage that would occur if each category of material were made available by recycle efforts at a rate of 30 percent of the net tonnage of material available in the municipal waste stream. The data show that this increase would double the amount of paper and aluminum available for recycle. Available glass and steel would increase by factors of six and four, respectively. The plastic that could be made available from recycle efforts is estimated to be 91,000 tons. In each case recycle markets could receive substantially increased amounts of each waste category.

A 30-percent increase in recycled glass containers combined with the current recycle level totals only 35 percent of the glass containers. The State of New York has determined that, since passage of the 1983 Returnable Container Act, the total waste stream has been reduced by five percent. An 80 percent rate of recycle has been achieved for glass beer and soft drink containers, an 84 percent rate of recycle for cans, and a 50 percent rate for plastic bottles (N.Y.D.E.C.).[4] Should the State of Florida take similar action, the recycle rates of glass, steel, and plastic could significantly increase.

Discussion of Results

Paper

During 1986 the recycle level for paper was estimated to be 435,000 tons per annum with 3,044,000 tons per annum remaining available in the municipal solid waste stream. A public program encouraging recycle in Florida to reach a recycle goal of 30 percent recycle is very likely to add an additional 913,000 tons per annum of paper to the current recycle market. George B. Elder, in a private communication,[8] had advised that under current conditions the paper recycled by voluntary recyclers and charitable groups now provides all of the region's current industry needs and that the industry is not prepared to use more recycled paper. It was pointed out that the issue in paper recycling was not a technical capability to recycle but rather finding markets for recycled paper.

The larger paper producing firms are fully integrated industries with considerable assets in the form of large land holdings used for the purpose of growing trees. An increase in recycled paper usage would produce a decline in the use of virgin timber for the production of paper goods. This could create a significant reduction in the return on investment which the paper industry has made in timberland. A reduction in cash flow from timber sales due to the use of recycled paper could represent a financial disincentive for an integrated paper producer. The net result of large scale recycle may be a reduction in the net asset value of the large timber tracts held by the paper industry.

It is conservatively estimated that each ton of paper that is recycled will save a Florida community $20 per ton in avoided disposal costs. This represents an avoided cost to the community and provides an economic basis for the value of disposing of raw but unprocessed recycled paper. It may be economic for communities to consider paying paper recyclers to take paper on an avoided cost basis. This approach has certain advantages over end use or market driven incentives, such as mandating percentages of recycle stock in end products, or changing paper goods specifications since it would be based on an economic incentive to increase profits.

However, the design of many books, magazines, and office paper products that use hot melt glues, certain paper glazes, laser printing, and most notably the dyed yellow paper in millions of phone directories reduces the recycle value of these paper products. Paper products which have designs that render them difficult to recycle or which create detrimental effects on the recycle process add to the cost of disposal that is paid in common. Lacking financial incentives to increase the recyclability of these products, by designing for recycle, there is little economic motivation for the producers and users of these products to improve their recyclability.

Glass

During 1986, 607,000 tons of glass containers of all types were discarded in Florida and it was estimated that 29,000 tons were recycled in the form of color segregated glass cullet. When segregated by color, glass has a value of from $30 to $40 per ton and mixed glass has a value of $5 to $10 per ton. For comparison, gravel in Florida has about the same value as mixed glass. Effectively, there is no market for mixed glass in Florida.

There are incentives for the glass industry to recycle glass that results from reduced power usage and increased furnace life. At this time the glass industry will purchase all color segregated glass that is supplied by Florida sources. The recycled content of glass containers produced in Florida ranges from 12–30 percent and could be increased to 26–100 percent, according to the industry. This being the case, the need for more effective recycle of glass containers consists largely of establishment of a system for segregation of glass from the waste stream in color sorted form.

Steel

The steel content of the solid waste stream that will be primarily impacted by a municipal waste recycle program is largely in the form of food and beverage cans. The current recycle rate for tin plate in Florida is estimated to be 10,000 tons per annum with 143,000 tons available in the municipal waste stream. Currently tin plate and resource recovery scrap are used in the production of wire rods. The ability of this market to absorb a large increase in the amount of tin plate and resource recovery scrap is open to conjecture at this time. Rebar frequently represents the lowest value product produced at an integrated steel mill. Both reinforcing bar and rod have limited specification requirements which results in the ability to accept relatively low grade steel stocks as part of the composition. This indicates that the end use markets available for tinplate and resource recovery scrap steel may be limited to construction industry needs and or export markets.

Aluminum

It is estimated that 69,000 tons of aluminum remain in the municipal solid waste stream after recycle of 24,000 tons of aluminum containers in Florida. The industry has the technical capability to recycle large increases in recycled aluminum containers. Additionally, there are significant cost savings in power that accrue to the industry when recycled aluminum is utilized. The major problem in recycling aluminum results from the need for development of source separation and collection systems to handle increased recycle levels.

Plastic

There are about 153,000 tons per year of plastic discards, in the State of Florida and an estimated 3,000 tons per year of plastic containers recycled in the state. Plastics amount to only 7.3 percent of the solid waste stream on a weight basis. However, because of their configuration and resilience it has been estimated that plastic containers may represent 25 percent of the waste stream on a volume basis (Schlegel and Fuller, 1988).[7] Nationally, only 1 percent of the plastic discards are estimated to be recycled; essentially, there is no existing support infrastructure capable of managing a large increase in plastic recycle levels at the present time. The plastics industry has indicated that there is no technical reason preventing the recycle of most of the plastics in the municipal solid waste stream. Recycled PET has a sales price of about 25 cents per pound vs. 60 cents for virgin PET. This provides a significant motivation for a processor to use recycled PET. This same condition is believed to exist in markets for HDPE and Polystyrene.[8]

Table IV. Quantities of material requiring recycle when recycle of the municipal waste stream reaches 30 percent, tons/annum.

Material	Current recycle	Net avail.	30% of net available	% increase to markets
Paper	435,000	3,044,000	913,000	210
Glass (containers)	29,000	607,000	182,000	628
Steel (Tin plate & res. recov.)	10,000	143,000	43,000	430
Aluminum (containers)	24,000	69,000	21,000	88
Plastic	3,000	303,000	91,000	[a]
Rubber tires	240	92,700	28,000	[a]
Totals	501,240	4,166,000	1,278,000	

[a] Percentage increases in the markets for plastic and tires are not considered meaningful, since there is essentially no existing market for these materials in Florida at the present time.

The potential entry of degradable plastics into the solid waste stream and recycle streams must be subject to scrutiny to ascertain that this is indeed a technology that should be encouraged. There is a possibility that the entry of degradable plastic into the waste stream could lead to contamination of the larger quantities of nondegradable plastic now available for recycle. The contamination has a potential for degrading the physical properties of products made from recycled plastic and may severely decrease their utility. Should this occur, the ability to effectively recycle the vast quantity of nondegradable plastic could be seriously impaired.

Tires

Rubber tires have presented problems to municipal waste managers for many years in finding ways of either recycling them or effectively disposing of the used tire. Whole tires tend to resurface when landfilled and act as mosquito breeding grounds when stored in the open. There are 28,000 tons of tires available in the municipal waste stream each year in Florida and unknown tonnages piled up at landfills and on private property. There is essentially no market for the recycle of tires at this time. The most economically recoverable value of a rubber tire is considered to be the high heat content of the tire that is released upon combustion. The heat content of a tire is about 13,800 BTU/lb., compared to 14,000 BTU/lb. of anthracite coal and 18,900 BTU/lb. of No. 6 fuel oil (9).

At present the Pinellas County, Florida mass burn facility includes tires as a fuel source. The tires are first sheared to prevent rolling within the furnace and are then included as part of the municipal waste stream entering the furnace. It has been determined that complete combustion occurs in this system, (private communication, Robert Van Deman, 1989).[10] It appears that communities having resource recovery plants may be able to dispose of tires and recover the energy value by this method.

Conclusions

Determination of market conditions for the recycle of paper, glass, steel, aluminum, plastic, and rubber tires indicates that recycle return-to-source of glass, aluminum and steel could be significantly increased under current conditions. Plastic recycle limitations are largely due to a lack of re-processing capacity, and paper recycling is currently limited by market/capacity saturation. Additionally, current conditions place a penalty on recycled paper as a raw material compared to virgin timber pulp, and there are some limitations on paper products compatibility with recycled paper.

While it is possible to increase to some extent the amount currently being recycled, it is also apparent that factors other than market or processing capacities will ultimately prevail, and that determination of the optimum waste management strategy for paper and plastic will require further study and more detailed economic analyses. Metals and glass are currently recycled by what is essentially a re-refining process which places no technical limit on the number of times these materials may be recycled. However, paper and plastics are limited in the number of times they may be recycled. Paper fibers become shorter each time they are reprocessed, and must eventually be discarded as a part of the paper industry waste stream. Plastics undergo thermal oxidative degradation which will progressively reduce their physical properties each time they are recycled.

The net effect of these limitations in paper and plastic use by the original source industry is that waste by-products will ultimately be produced and appear in the waste stream, requiring incineration or landfill disposal. In view of these limitations, and barring any new, non-original source end uses of these materials, the costs incurred in recovering paper and plastic for this limited type of continually degrading re-use may mitigate against recycling in favor of incineration. Both paper and plastic have high BTU contents and recycling for fuel values could offset the use of virgin resources such as oil and coal.

In view of the fact that petroleum resources are both a source of energy and a raw material for production of plastic products, it appears doubtful that the added cost of recovery and reprocessing for recyclable plastic will be either economically or environmentally beneficial. In addition, the wisdom of replacing renewable resources such as fenceposts that are naturally degradable with reclaimed waste plastic produced from petroleum resources must be seriously questioned.

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Edwin A. Korzun is Executive Director of the Research Center for Waste Utilization, Department of Chemical and Environmental Engineering, Florida Institute of Technology, 150 West University Blvd., Melbourne, FL 32901-6988. N. Thomas Stephens is Professor and Department Head and Howell H. Heck is an Assistant Professor with the Department of Chemical and Environmental Engineering of the Florida Institute of Technology. This paper was submitted for peer review on April 26, 1989. The revised manuscript was received August 24, 1989.

BEYOND THE BLUE BOX

Your Guide To Waste Reduction And Recycling In Metropolitan Toronto

It is hoped that this booklet will help you reduce, reuse and recycle your waste. For future reprints, please send any new ideas, suggestions, additions or changes to:

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Solid Waste Management Division
439 University Avenue, 20th Floor
Toronto, Ontario
M5G 1Y8

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Introduction

Garbage. It's a topic of great controversy and concern. Landfill sites are almost full and new ones are difficult to find. More and more garbage is being produced each year. The consequences of our throwaway society are finally catching up to us. But you've heard all this before. The question is :

What are we going to do about it?

Since we all produce garbage we are all part of the problem. But we can also be part of the solution. Instead of throwing away items we no longer need, we can make sure they find their way to the next stage in their life cycle. We can REDUCE the amount of waste we produce in the first place; REUSE an item or find someone who can use it; or RECYCLE the product so that our valuable natural resources are used again and again.

You make waste management decisions hundreds of times each day. Sometimes there is no other choice but to throw out your "waste". But there are many times when you can make a difference. It may not seem like much, but if all 2.2 million people in Metro Toronto make small changes in their buying and waste handling habits, it will make a big difference. Reduce, reuse and recycle are words that need to become part of our everyday vocabulary.

Here are a few things you can do to help cut down on the mounds of garbage thrown out each year:

- *recycle your glass bottles and jars, plastic bottles and jugs, metal cans, newspapers and corrugated cardboard;*
- *buy in refillable containers whenever possible;*
- *compost your food and yard waste;*
- *take household hazardous wastes to a depot;*
- *buy products in recyclable packaging or in as little packaging as possible;*
- *take bags with you when you go shopping and reuse them;*
- *donate your old furniture and clothing to a charity;*
- *purchase durable goods rather than disposable items.*

Throwing things in the garbage is just a habit, a bad habit. The time has come to take responsibility for the waste we produce and start forming good habits.

Blue Box Recycling

All single family houses in Metropolitan Toronto should now be served by a Blue Box multi-material recycling program.

Using your Blue Box is easy. Just follow these steps...

1. Save empty glass bottles and jars, metal cans, and all plastic bottles and jugs in your Blue Box.

Plastic bottles and jugs include those used for soft drinks, detergents, water, juice, bleach, shampoo, motor oil and anti-freeze.

2. Rinse containers and remove all caps and lids from bottles and jars. (Note: Motor oil and anti-freeze containers should not be rinsed. Leave caps on to avoid leaks.) You don't have to remove labels from anything.

3. Newspapers and flattened corrugated cardboard boxes should be bundled with string or put in plastic grocery bags, and placed next to, or on top of your Blue Box for collection. Bundles of corrugated cardboard should be no larger than 2 ft. x 2 ft. x 1 ft. thick.

Corrugated cardboard boxes are the type used for stereos, furniture and large appliances, not cereal or shoe boxes.

4. Put out your Blue Box, along with your newspapers and corrugated cardboard, for collection on your municipality's pick-up day.*

* *If possible, only put your Blue Box out for collection when it's full. This will make the program more efficient.*

Please Don't

Don't include other items, such as light bulbs, window glass, mirrors, ceramics, dishes, clay bottles or flower pots, paint cans, scrap metal, plastic tubs (such as margarine or yogurt containers), plastic wraps or packaging, or foam in your Blue Box.

Don't include waxed or coated boxes, pizza boxes, cereal or shoeboxes, or magazines with your corrugated cardboard and newpapers.

Please look for notices in local daily newspapers to inform you as additional materials that are acceptable for recycling are added to the Blue Box program.

Recycling Depots

Municipalities are working to expand multi-material recycling programs to all residents. If you are not currently served by a Blue Box program, take your recyclables to one of the many recycling depots in Metropolitan Toronto listed at the back of this booklet. Since depot locations frequently change, call the Recycling Hotline 960-0938 for the most up-to-date- information.

Other Recycling Opportunities

White Goods, such as fridges and stoves, can be recycled for their scrap metal. In all municipalities, except the City of Toronto, call the number listed below to arrange for a pick-up. In the City of Toronto, pick-ups take place on regular Thursday or Friday garbage days.

Christmas Trees are chipped and used in municipal parks. Collections take place in early January. Call your municipality for details.

For further information on municipal recycling programs call:

East York	461-9451 ext. 544
Etobicoke	394-8350
North York	224-6205
Scarborough	396-7372
Toronto	392-7742
York	394-2600

Household Hazardous Waste

Many of the products you use every day contain toxic ingredients. These products should be handled with care, when you use them and when you are finished with them. The average household produces 35 litres of toxic waste per year. This adds up to a big waste disposal problem when you consider the number of households in Metro Toronto.

Hazardous wastes include those that are:

Corrosive Substances such as car battery acid and drain cleaners, that eat and wear away at many materials.

Flammable Liquids that can ignite, such as lighter fluid, turpentine, gasoline.

Reactive Materials that can create an explosion or produce deadly vapours, such as bleach mixed with ammonia-based cleaners or with acids.

Toxic Materials that are poisonous or lethal to you, your children and your pets, even in small quantities, such as rat poison, some potent medicines, cleaning fluids, pesticides, bleach.

Hazardous materials should not be poured down the drain, on the land or into sewers. Sewage treatment plants are designed to break down biological, not chemical waste. Hazardous chemicals cannot always be removed from the water, and they can kill the bacteria that do the work of sewage treatment. Toxic chemicals that settle in the sewage sludge end up being buried or incinerated.

Pouring toxics, such as used motor oil, down a storm sewer is an even greater problem since they bypass the sewage treatment process and go directly into the lake where they pollute our beaches and our drinking water.

Hazardous waste should not go out with your regular garbage either. Not only is it harmful to the environment, but it could injure a sanitation worker.

What You Can Do

Our environment is paying the price for the convenience products we use. Look for alternatives to products that contain toxic chemicals. For example, baking soda can be substituted for many kitchen and bathroom cleaners, while vinegar with water and salt is a good general purpose surface cleaner.

If you can't find a safe alternative, use a hazardous product sparingly. More is not necessarily better. Buy only what you need and use it up. Give any leftover products to a neighbour.

For safe disposal, residents of Metropolitan Toronto, should bring their household hazardous wastes to one of Metropolitan Toronto's depots.

Household Hazardous Waste Depots

Brock West Landfill (Pickering)
Concession #3, West of Brock Rd.
Monday to Friday 8 a.m. to 4 p.m.
Saturday 7 a.m. to 12:30 p.m.

Keele Valley Landfill (Maple)
McNaughton Rd. East of Keele St.
Monday to Friday 8 a.m. to 4 p.m.
Saturday 7 a.m. to 12:30 p.m.

The Former Commissioners Incinerator (Toronto)
400 Commissioners St.
Saturday 7 a.m. to 12:30 p.m.

Ingram Transfer Station (North York)
50 Ingram Dr.
Saturday 7 a.m. to 12:30 p.m.

Scarborough Transfer Station (Scarborough)
Transfer Place
(South from Nugget Ave., West of Markham Rd.)
Saturday 7 a.m. to 12:30 p.m.

Victoria Park Transfer Station (North York)
3350 Victoria Park Ave.
Saturday 7 a.m. to 12:30 p.m.

Bermondsey Transfer Station (North York)
188 Bermondsey Rd.
Saturday 7 a.m. to 12:30 p.m.

Disco Transfer Station (Etobicoke)
120 Disco Rd.
Saturday 7 a.m. to 12:30 p.m.

Dufferin Transfer Station (North York)
35 Vanley Cr.
Saturday 7 a.m. to 12:30 p.m.

Symes Transfer Station (Toronto)
150 Symes Rd.
Saturday 7 a.m. to 12:30 p.m.

Please Note:

- All wastes should be in sealed containers and clearly labelled.
- Different materials must not be mixed together.
- No containers larger than 20 litres accepted.
- Maximum quantity of materials per car is 50 litres.
- No explosives, commercial, industrial, pathological, PCB, radioactive, or unknown wastes accepted.
- Motor oil can be taken to a gas station for recycling. For the location nearest you call 960-0938.

Toxics Taxi

- The Metropolitan Toronto Works Department is currently operating a "TOXICS TAXI" which provides free pick-up of household hazardous wastes from residents of Metropolitan Toronto with a minimum quantity of 10 litres. You must be at home for the pick-up.

For more information, call the Metro Works Department's Household Hazardous Waste Hotline at 392-4330

WHAT TO DO WITH...

Aerosol Sprays

Aerosol sprays can contain organic solvents. They spray a fine mist that can easily enter your lungs when you breathe. Pesticide sprays are particularly dangerous because they contain poison. Some aerosols may also contain chlorofluorocarbons which contribute to the destruction of the ozone layer.

ALTERNATIVES:

Air fresheners

Ventilate; leave an open box of baking soda in refrigerators and closets, or a dish of vinegar in the room.

Health and beauty products

Look for non-aerosol formulas. Pump containers and roll-ons give you 100% of the product in the container.

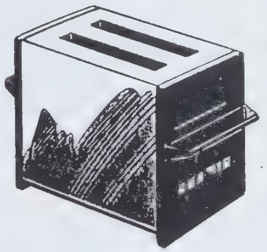
Paints

Use liquid latex paints where possible.

Pesticides

Avoid using pesticides wherever possible, especially those in aerosol form. You could end up inhaling some of the vapours. See pages 28-29 for some alternatives.

Appliances



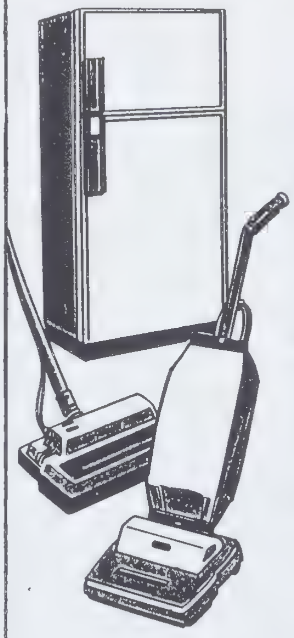
✓ Reduce

Avoid gimmicks. Only buy an appliance if you really need it. Buy a good quality appliance that will last many years. Repair appliances whenever possible.

Reuse

If you no longer need an appliance that is repairable or in good working order, donate or sell it to someone who can use it. A notice posted at your grocery store or an ad in the newspaper will help you find a buyer. You can donate, and buy, used appliances at charitable organizations:

Appliances Cont'd



GOODWILL INDUSTRIES will pick up working and repairable white goods* and most small appliances. Staff repair items and sell them in their stores. Television sets are sold in their "As Is" shop.

Call 362-4711 to arrange pick-up. Drop small items off at the stores or warehouse. Check your telephone book for locations. Do not take appliances to drop-off boxes.

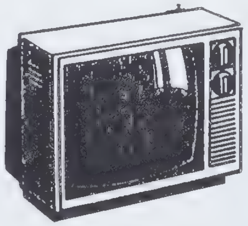
SALVATION ARMY FAMILY SERVICES will pick up white goods* in working order except for freezers and automatic washers (unless apartment size). Most small appliances, as well as lawnmowers, snow blowers and bicycles, are accepted for sale or repair. A receipt for contribution-in-kind may be given.

To arrange pick-up and for more information call 366-4686. Please do not take appliances to drop-off boxes. For store addresses, check your telephone book.

ST. VINCENT DE PAUL SOCIETY will accept small appliances in working order. Call 740-9595 to arrange pick-up (usually Mon. or Wed.) or drop off small items at one of their nine stores. Do not take appliances to drop-off boxes. For store addresses, check your telephone book.

WOODGREEN RED DOOR, 875 Queen Street East, will accept small appliances in working order. Call first 469-4123.

♻ Recycle



If an appliance cannot be repaired, you may be able to recycle it. Large appliances are made from valuable natural resources that should not be wasted. Some appliances, such as refrigerators and air conditioners, contain coolants that contribute to the destruction of the ozone layer if disposed of in landfill sites. Each municipality in Metro Toronto has a White Goods/Bulky Items collection service. See page 5. Most small appliances are not easily recycled at this time.

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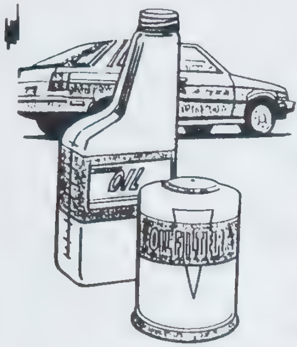
* *White Goods refers to washers and dryers, refrigerators, stoves and other large appliances. Toasters, kettles, TVs and stereos are small appliances.*

Automotive Products



Most automotive products contain hazardous chemicals. In addition to the additives with which it started, used motor oil may have picked up lead and other toxic metals as it travelled through the motor. Batteries contain lead and sulphuric acid. Both oil and batteries can be recycled. Antifreeze is poisonous.

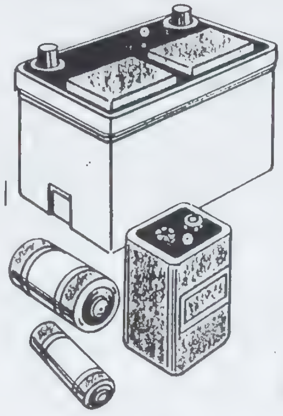
ALTERNATIVES:

Oil
To recycle oil see page 26.

Batteries
To recycle batteries see pages 39-40.

Antifreeze
Use it up. Take what you don't need to a Household Hazardous Waste Depot. See pages 7-8.

Batteries



Car batteries contain lead and sulphuric acid. They should not end up in landfill sites. Registered battery recyclers can recycle the lead, sulphuric acid and plastic casing.

When you buy a new battery at a service station, ask them to recycle the old one, or take the battery yourself to a Household Hazardous Waste Depot. See pages 7-8.

Check the Yellow Pages under Batteries for listings.

Household batteries (dry cells) contain heavy metals that are released into landfill leachate. These should be taken to either a Household Hazardous Waste Depot (see pages 7-8) or to one of the City of Toronto's battery depots (see pages 39-40).

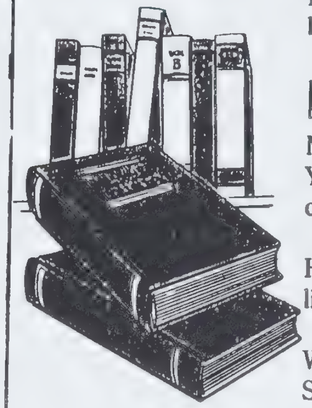
✓ Reduce

Use an AC/DC adapter instead of batteries whenever possible.

Reuse

Use rechargeable batteries to save money and our environment. One charger can charge many different sizes of batteries.

Books



✓ Reduce

Borrow books from a public library or from friends. Buy used books.

Reuse

Many used book stores in Metro buy old books. Check the Yellow Pages under Book Dealers. - Used and Rare. Many charitable organizations accept used books for selling.

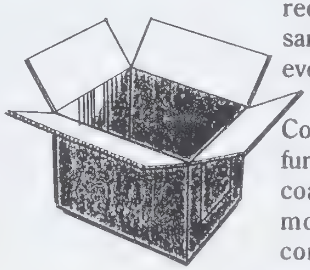
Hospitals, senior citizens homes, community centres and libraries often accept old books. Used books are welcome at:

WOMEN IN TRANSITION, 1322 Bloor St. West	533-1175
ST. VINCENT DE PAUL SOCIETY	740-9595
SALVATION ARMY FAMILY SERVICES	366-4686
GOODWILL INDUSTRIES	362-4711

♻ Recycle

The binding on books must be removed individually before recycling. This makes it difficult to recycle books. Domtar recycles large quantities of hardcover books over one inch thick. Pick up minimums are usually one tonne. For smaller loads, a fee may be charged to cover transportation costs. Call 232-8858 for details.

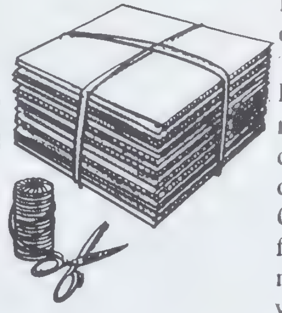
Cardboard



Corrugated cardboard can easily be recycled to make new cardboard. In fact, we currently import large quantities of used corrugated cardboard from the United States to meet the requirements of our corrugated cardboard industry. At the same time, thousands of tonnes of cardboard go to landfill sites every year.

Corrugated cardboard is the type used for large appliances, furniture and stereo boxes. Cereal, shoe, pizza and waxed or coated cardboard boxes should not be included. Although most households produce only small amounts of used corrugated cardboard, industries, restaurants and stores produce large quantities.

Cardboard Cont'd



Recycle

People who live in houses can put out flattened corrugated cardboard with their Blue Boxes, in 2 ft. x 2 ft. x 1 ft. bundles.

For industries and commercial establishments, a paper recycling company can pick up or buy your corrugated cardboard. If your company, store or restaurant is not recycling cardboard now, a few phone calls may save you some money. Call the Metro Industrial Waste Recycling Hotline at 392-4200 for a list of waste paper dealers. Small businesses in some municipalities can receive curbside pick-up of cardboard. Call your municipality for details. See page 5.

Christmas Trees

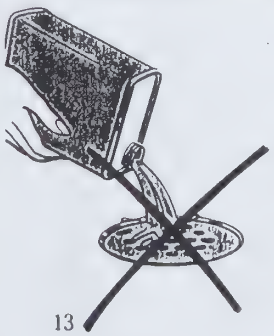
✓ Reduce

Buy an artificial tree instead of a real one; it can be reused for many years. Decorate a large house plant or a special tree outside. A small tree can be potted, used indoors over the holiday season and then planted in the garden.

Recycle

Municipalities operate Christmas tree recycling programs each January. Call your municipality to find out when you should put your tree out for pick up. The trees are chipped for use on paths and around trees in municipal parks. Be sure to remove all nails, wire, and decorations.

Cleaning Products



Caustic and corrosive products can cause severe eye and skin damage. Some are poisonous. Never mix chlorine bleach with ammonia, acids, or toilet bowl cleaners because toxic fumes result. These products, when poured down the drain, kill helpful micro-organisms in the sewage treatment plant. They can also be harmful to the people who use them.

ALTERNATIVES:

Oven cleaners
Clean your oven at the time the spills occur; cover with moistened baking soda and let sit until softened.

Cleaning Products Cont'd

Drain opener/cleaner
Pour boiling water down twice weekly; throw in a few handfuls of baking soda followed by 1/2 cup vinegar, let sit for an hour, then run water through; try a plunger or metal snake.

Rug and upholstery cleaners
Pour salt on red wine spills, vacuum when dry; sprinkle cornstarch or cornmeal on rug and vacuum; use club soda to remove stains.

Abrasive powders containing chlorine
Baking soda.

Chlorine bleach
Sodium hexametaphosphate, eg. Borax.

Silver polish
Soak silver in 1.5L warm water, 1 tsp. salt, 1 tsp. soda and a small piece of aluminum foil, or soak overnight in sour milk.

Furniture polish
1 tsp. lemon oil in about .5L mineral oil; light soapy water and a soft cloth; toothpaste on wood removes water marks; rub wood with a walnut (removed from the shell) to remove scratch marks.

Shoe polish
Polishes which do not contain methylene chloride, trichloroethylene or nitrobenzene.

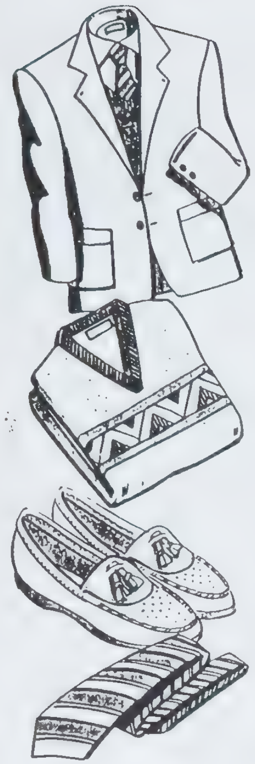
Moth balls
Cedar chips; lavender and shredded newspaper.

Window cleaner
2 tbsp. vinegar in 1.5L warm water; crumpled newpapers or rags can be used in place of paper towels.

Clothing

✓ Reduce

Buy good quality clothing that will last. When styles change, clothing can be altered instead of discarded.



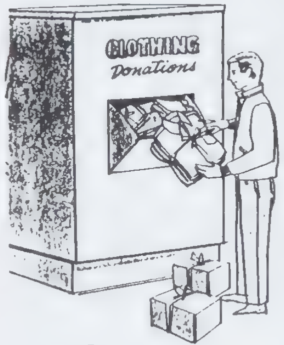
Reuse

Clothing you no longer need can be sold or donated. Many agencies in Metro take used clothing, in addition to the charitable organizations listed here. Call your local community centre or religious institution to find out if they can use old clothing. Rummage sales also rely on old clothing donations. Theatre companies can also use vintage clothing.

Remember when donating clothes:

- *Clothing should be clean.*
- *Items that go together such as shoes, socks and belts should be tied or pinned together.*
- *Many places that take clothing are short of space, so donate clothing appropriate to the season.*
- *Drop-off boxes for the Salvation Army, Goodwill Industries and the St. Vincent de Paul Society often overflow on weekends. As these boxes are cleared several times during the week, a donation on a Monday, Tuesday or Wednesday is less likely to fill up the box.*

GOODWILL INDUSTRIES operates 200 drop-off boxes and 14 stores for donating clothing in the Metro area. Over the next five years the drop-off boxes will be replaced by Attended Donation Centres. Goodwill accepts most clothing and repairs items before selling them. Clothing that is beyond repair is baled and sold as rags. There is no pick-up for clothing. For the drop-off location nearest you, call 362-4711



SALVATION ARMY FAMILY SERVICES operates 70 drop boxes and 15 stores for clothing donations in the Metro area. Call 366-4686 for the location nearest you.

ST. VINCENT DE PAUL SOCIETY operates 20 drop boxes and nine stores for clothing donations in the Metro area. Call 740-9595 for locations.

416 DUNDAS, a women's shelter, accepts women's clothing in season as well as towels, sheets and blankets. It is open seven days a week, Tuesday and Thursday until 10 p.m., other days until 5 p.m. Call 928-3334 for more information.

JESSIE'S CENTRE FOR TEENAGERS, 154 Bathurst St., south of Queen, accepts maternity and other women's clothing as well as baby and children's clothing for its Swap Shop. Sheets, quilts, towels and other household items are needed. Monday to Friday 9 a.m. to 5 p.m., 365-1888.

NATIVE CANADIAN CENTRE OF TORONTO, 16 Spadina Rd., north of Bloor, accepts donations of all types of clothing. 9 a.m. to 10 p.m., 964-9087

NORTH YORK WOMEN'S SHELTER accepts women's and children's clothing as well as new personal hygiene items, such as shampoo and toothpaste. Donations are accepted ONLY on Thursdays and Saturdays from 9 a.m. to 9 p.m. Call 635-9630 to make arrangements for dropping off items.

WOMEN IN TRANSITION, 1322 Bloor St. W. near Lansdowne, accepts women's and children's clothing. Wednesday is the best day for donations. Call first 533-1175.

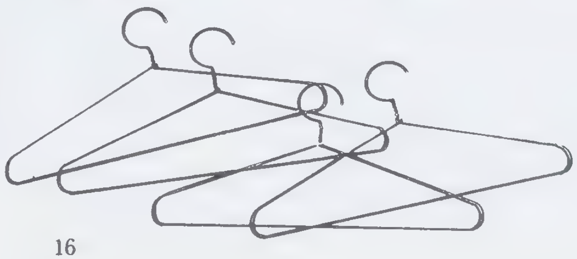
WOODGREEN RED DOOR at Woodgreen United Church, 875 Queen St. E., accepts clothing and other household items as well as craft items for its daycare centre. Evenings and Sundays are the best times for donations. Call first 469-4123.

If you have high quality clothes in good repair, you may want to offer them for sale through a clothing resale shop. Most work on a consignment basis. Buy used clothing as well. For stores near you, look in the Yellow Pages under Clothing Bought and Sold.

Coat Hangers

Reuse

Many dry cleaners accept metal coat hangers.

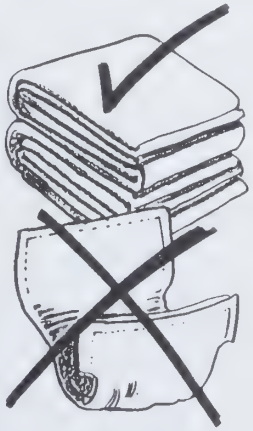


Diapers

Disposable diapers have become a big waste management problem. One American publication recently stated that Americans throw away 18 billion dirty diapers each year. Other sources say that a baby uses one tonne, or 100,000 disposable diapers by the time he or she is toilet-trained. In Metro Toronto, it is estimated that approximately 47,000 tonnes of disposable diapers enter landfills every year.

Did you know that you should rinse out disposable diapers before throwing them out? Landfill sites were not designed to accept human excrement and the pathogens it can carry. When the excrement goes into the toilet, it ends up at the sewage treatment plant where it can be properly treated.

Disposable diapers have a useful life of a few hours, but may take 500 years to break down in landfill sites. The plastic lining is made from oil, which is a non-renewable resource. The absorbent layer is made of wood pulp from trees that have taken years to grow.

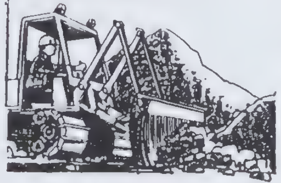


Reuse

Cotton diapers on the other hand, can be used over and over again. They are made from cotton - a crop that is grown every year. When they finally end up in the landfill, cotton diapers decompose in about six months. Many babies experience less diaper rash with cotton diapers than with disposables. Cotton diapers with velcro tabs are convenient, too.

You can wash cotton diapers or you can hire a diaper service. Diaper services usually cost less than disposable diapers; washing them yourself costs much less. Cotton diapers are available at most department and baby supply stores.

Disposable Products

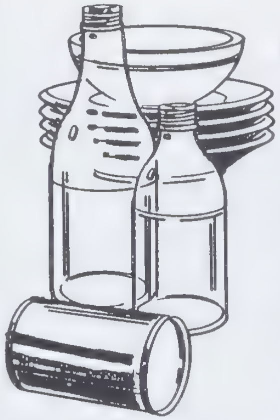


It is almost impossible to go through the day without using disposable products and packaging. Every day we bury valuable resources in our landfill sites that had a useful life of only a few minutes.

Reduce

First, examine your buying habits. Do you buy good quality, long lasting products? Do you look for alternatives to throwaway items? Do you prefer items in returnable, recyclable or minimal packaging?

Disposable Products Cont'd



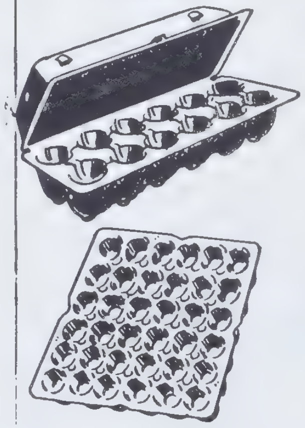
Reuse

Rechargeable batteries can replace disposables. Plastic bags and containers can be used again and again. A set of dishes purchased by your organization can replace disposable cups and plates. Purchase plastic plates and cups for picnics and outdoor use. Buy beverages in refillable bottles.

Recycle

Choose products that can be recycled or that are sold in recyclable packaging. Glass bottles and jars, metal cans and plastic bottles can be recycled. When products are recycled instead of thrown away, you not only preserve space in landfill sites but make better use of our resources.

Egg Cartons



There are two types of egg cartons on the market: molded pulp and polystyrene. Molded pulp cartons are made from paper recycled from the paper mills. These cartons eventually decompose in landfills.

Polystyrene containers often use chlorofluorocarbons in their manufacture although by late 1989 this should no longer be the case. Chlorofluorocarbons are involved in the breakdown of the ozone layer. Polystyrene cartons do not decompose easily.

Reduce

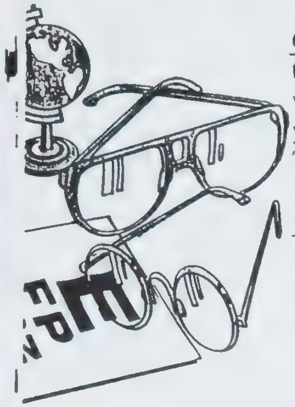
Wherever possible, purchase eggs in molded pulp containers and let your grocery store manager know your preference.

Reuse

Farmers markets often accept egg cartons. Check with food banks in your neighborhood to see if they need egg cartons.

STOP 103, a food bank at 1120 Ossington Ave. north of Dupont accepts both kinds of egg cartons. 588-1963.

Eyeglasses



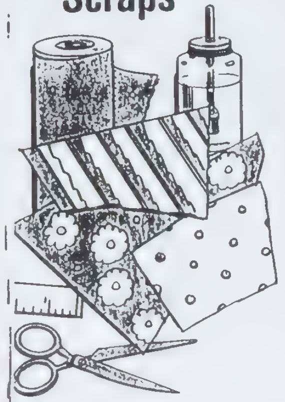
Several organizations accept old eyeglasses for use in the Third World.

CANADIAN NATIONAL INSTITUTE FOR THE BLIND through the Christian Mission for the Blind sends eyeglasses to people who have undergone cataract surgery in the Third World. Send your glasses to the Low Vision Clinic, 1929 Bayview Avenue, Toronto, Ontario M4G 3E8. 480-7464.

CANADIAN FOUNDATION FOR WORLD DEVELOPMENT sends 50,000 pairs of glasses annually to Central American countries along with a team of volunteers. Send your glasses to 2441 Bayview Avenue, Willowdale, Ontario M2L 1A5. 445-4740.

Ask your optometrists if they might consider collecting old eyeglasses for these organizations.

Fabric Scraps



Reuse

Donate fabric scraps and other items for children's crafts to your local community centres, daycare centres or schools. Call first to find out if they want these items.

HARBOURFRONT EDUCATION AND RECREATION programs, York Quay Centre, 235 Queen's Quay W., Toronto can often use fabric scraps, paper rolls, clean socks and two-litre plastic pails. Call ahead, 973-4989.

UMBRELLA CENTRAL DAYCARE SERVICES, St. Barnabus Church, 361 Danforth Ave., Toronto, accepts fabric scraps and paper supplies for local daycare centres. Drop items off Mon. - Fri. 9 a.m. to 12 noon or 2 p.m. to 4 p.m. 461-0958.

Food

On average we throw away 20% of the food we buy. This is not necessarily bad food or plate scrapings, but food that never even reached our plates.

✓ Reduce

Use food when it is fresh. Buy only what you can use.

Food wastes can be composted. See following section.

Food Cont'd

Food banks welcome large quantities of food from restaurants, industry and bakeries, and non-perishable food from individuals.

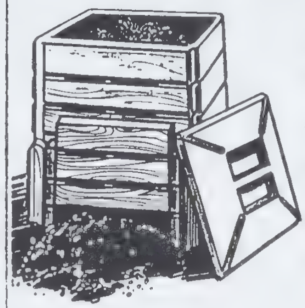
DAILY BREAD FOOD BANK, 1966 Weston Road, 769-5155.

SECOND HARVEST, 12 Shuter Street. Call first, 362-5471.

HARBOUR LIGHTS, (Salvation Army), 160 Jarvis, 363-5496.

FOODPATH, 106 Lakeshore Road West, Suite 104, 274-2710.

Food and Yard Wastes



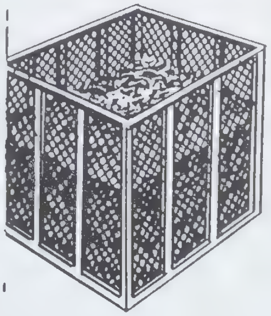
At least 30% of our household waste is made up of food scraps, egg shells, coffee grounds, vegetable peels and yard wastes. Instead of wasting this organic material by throwing it in the garbage, it can be turned into a soil conditioner for our gardens. The process is called composting.

When leaves and plants die in the forests and fields, micro-organisms break them down to fertilize the next generation of plants. By composting, this natural process can be adapted for food and yard wastes.

When we place our vegetable peelings, food scraps, yard wastes, leaves and grass in a compost pile, the millions of bacteria present in the soil and food go to work. They use our compost as a source of food. As they "digest" the pile, it begins to heat up.

Two types of bacteria carry out this function: one that uses air and one that doesn't. The air-loving bacteria break down the organic matter without producing odors. These are the ones to encourage by turning the pile to ensure enough oxygen is at the centre.

Over time, what started out as leaves and vegetable peels turns into a brown soil-like compost. The amount of time it takes depends on what is in the pile, how often it is turned, and if it is moist enough. Leaves take longer to break down than other vegetable matter. In three months to one year, the compost should be ready to use.



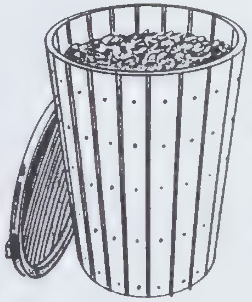
You can also use leaves as a mulch around shrubs and plants in the garden to hold in moisture and deter weed growth. See page 25.

BUILD YOUR OWN COMPOSTER

Basic ingredients:

- *organic material, vegetable and fruit peels, egg shells, coffee grounds, food scraps (don't include oils, cheese or meat as these attract animals), garden wastes, grass and leaves in small amounts, ashes from your fireplace, sawdust.*
- *some structure to keep the compost together in a pile and let lots of air in.*

The simplest composter is a cylinder of plastic fencing or chicken wire that keeps the pile together. This is useful for large volumes of leaves. Water the pile when dry, and turn it to dry it out after a long rainy period. To turn the pile, open up the fencing, move it over a little and shovel the unfinished compost back in.

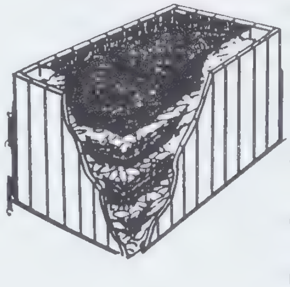


Another simple composter is made from a plastic garbage container or drum with holes drilled in the side for ventilation. Make sure you can get your shovel in to turn the compost periodically.

A wooden box with air space between the slats can be used in a similar manner. If possible, make the front panel removeable for easy turning of the pile.

A compost pile with two or more sections allows you to fill up one section, turn it over into the other side so that it gets lots of oxygen and then let it sit for a while. This gives you an evenly composed finished compost.

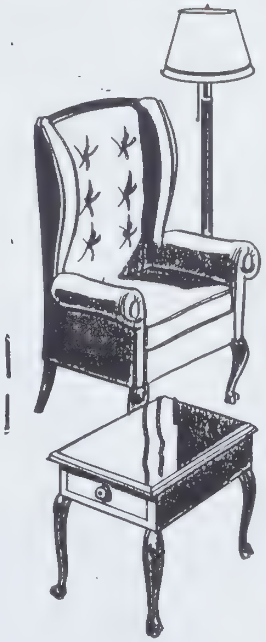
For more information on composting, call the Recycling Hotline at 960-0938.



Basic instruction:

- *Start with a layer of kitchen and yard waste.*
- *Add a shovel full of dirt.*
- *Manure, commercial fertilizer of compost starter can be added.*
- *Add more organic matter and occasionally a shovel full of dirt.*
- *When adding leaves or grass, mix them in with other compost.*
- *If you don't turn the pile, it will take a longer time to decompose.*
- *Turn the pile when the build up of heat decreases. It should heat up again.*
- *If there is an odor problem, turn the pile more frequently.*
- *Make sure there is enough moisture - damp sponge consistency is best.*
- *Compost will be soil-like and crumble when finished.*

Furniture



Many charitable organizations can make good use of furniture you no longer need. Most organizations want items in good condition only, but Goodwill Industries will also repair furniture. Do not take furniture to drop-off boxes.

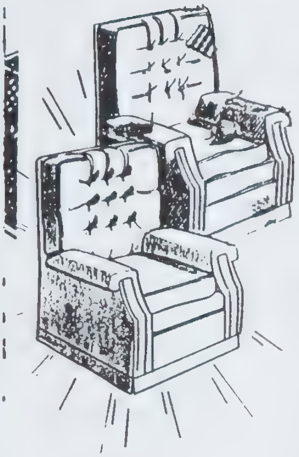
Your local religious organization or community service agency may be helping refugees and other people in transition with their housing needs and may accept your old furniture.

SALVATION ARMY FAMILY SERVICES offers a pick-up service Monday to Friday between 9 a.m. & 5 p.m. When you call, be sure to describe every item you have for pick-up to ensure there will be enough room in the truck. Check your telephone book for store addresses.

Contribution-in-kind charitable tax receipts may be issued especially for office furniture and equipment. For items over $1,000, an appraisal from an outside party is needed. Call 366-4686 to arrange furniture pick-up or for more information.

ST. VINCENT DE PAUL SOCIETY. Call 740-9595 for pick-up of household furniture (no fridges or stoves). Check your telephone book for store addresses.

Furniture Cont'd



416 DUNDAS will accept furniture, especially bedroom furniture as well as sheets and blankets. Drop items off 9 a.m. to 5 p.m. daily; Tuesday and Thursday until 10 p.m. 928-3334.

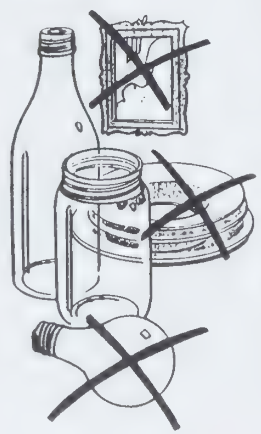
NORTH YORK WOMEN'S CENTRE will accept furniture Thurs. between 9 a.m. and 9 p.m. 635-9630.

WOODGREEN RED DOOR at Woodgreen United Church, 875 Queen Street E. Please call 469-4123 before you bring any furniture. No pick-up service.

GOODWILL INDUSTRIES. Call 362-4711 to arrange pick-up. Be sure to mention everything that you need picked up. Items will be repaired as long as the are structurally sound, not water-damaged or pest-infested. Reupholstering and refinishing is done at the Jarvis Street warehouse. Mattresses are also rebuilt. Check your telephone book for store addresses.

JESSIE'S CENTRE FOR TEENAGERS, (Baby Furniture)
154 Bathurst Street (below Queen), 365-1888. Open Monday to Friday 9 a.m. to 5 p.m. No pick-up. Call before you bring furniture.

Glass



♻ Recycle

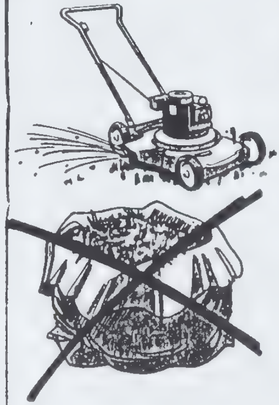
Glass bottles and jars are included in Blue Box programs and are accepted at many depots. See pages 39-40. The glass is crushed and melted with other materials to make new glass bottles and jars.

Please rinse containers well and remove lids and caps. Labels do not need to be removed.

Other types of glass such as china ware (eg. plates, bowls, figurines), earthenware, porcelain (eg. electrical insulators, sinks, toilets), clay pots, pyrex, mirrors, light bulbs, windows, and crystal have different chemical compositions than the glass used to make bottles and jars. As a result these materials CANNOT be recycled with bottles and jars.

Factsheets about glass recycling are available by calling the Recycling Hotline at 960-0938.

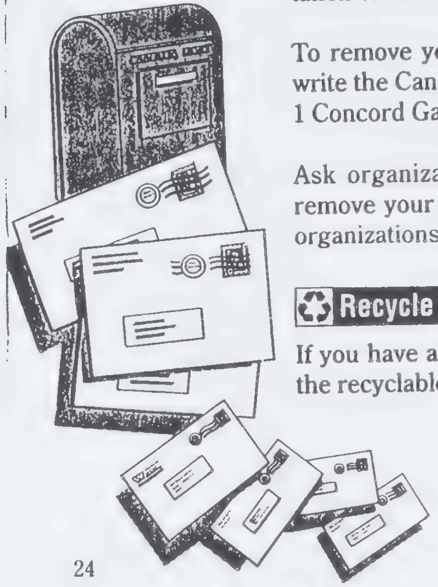
Grass Clippings



Grass clippings take up a lot of room in landfill sites in the summer. They contain nitrogen which should be reused on your lawn. Don't spend your summer bagging your lawn clippings. Follow these tips and leave grass clippings on the lawn where they belong. You can also put some of them in your compost pile.

- *Only cut your lawn when it is dry - this prevents clumping of the clippings.*
- *Don't let your grass get too tall before cutting it, or cut it too short. Clippings less than 1" long can easily fall through the grass to the soil below.*
- *Make sure the lawnmower blade is sharp for finer clippings.*
- *If you get a new mower, get one that mulches the grass.*
- *If you don't like leaving the clippings, try removing clippings only every other time.*

Junk Mail



✓ Reduce

You can reduce some of the junk mail you receive. The Canadian Direct Mail Marketing Association provides mailing lists to many companies. Along with these lists, they provide a deletion list. Before a mailout, all names on the deletion list are taken off the mailing list.

To remove your name from at least some mailing lists, call or write the Canadian Direct Mail Marketing Association,
1 Concord Gate, North York, at 1-800-668-9277.

Ask organizations to which you belong or donate money to remove your name from the mailing lists they trade with other organizations.

♻ Recycle

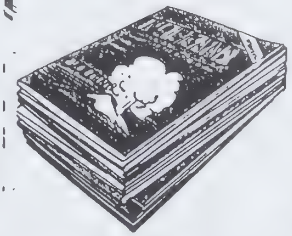
If you have a fine paper recycling program at your office, bring the recyclable portion of your junk mail into work for recycling.

Leaves

Leaves can be composted or used as a mulch in your garden. Used as mulch around trees, shrubs and between rows in the vegetable garden, they hold in moisture, smother weeds, and eventually decompose adding organic material to the soil.

Detailed information on leaf composting is available through the Recycling Hotline, 960-0938.

Magazines

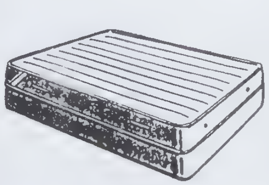


✓Reduce **Reuse**

Share magazines with your friends. Donate old magazines to hospitals, senior citizens' homes and schools. Magazines that are not religious or highly political are best.

Most magazines have a glossy finish. This is created by a layer of clay on the paper before it is printed. The clay creates problems in paper recycling. Magazines are not acceptable in most recycling programs at this time.

Mattresses



Reuse

GOODWILL INDUSTRIES rebuilds mattresses in its Jarvis Street plant. Mattresses are stripped to the springs and rebuilt using new fire retardant material.

Mattresses must not be water-damaged or pest-infested. Please do not drop off mattresses at depots. Call Goodwill at 362-4711 to arrange pick-up.

Mercury

If you break a mercury thermometer, collect the mercury in a small container, label it and take it to a Household Hazardous Waste Depot. See pages 7-8 for depot locations and times.

Metal

Recycle

Metal food and beverage cans are included in Blue Box programs and are accepted at many depots. See pages 4, 39-40.

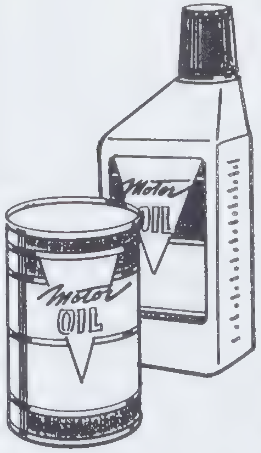
Please rinse containers well and ensure that lids are placed inside the can. Labels can be kept on. Do not flatten cans as this makes it difficult for the aluminum and steel cans to be mechanically separated.

Metal Cont'd

Other metal items such as paint cans, coat hangers, car batteries, pipes, aluminum siding and wire cannot be recycled with steel and aluminum cans. If you are getting rid of large quantities of metal you should contact local scrap metal dealers. Look in the Yellow Pages under Scrap Metal for locations.

Factsheets about recycling steel and aluminum cans are available from the Recycling Hotline, 960-0938.

Oil



Recycle

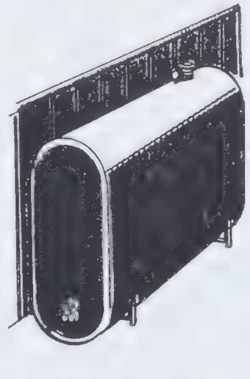
Oil is a non-renewable resource that can easily be recycled.

Motor Oil

Recycled motor oil is as good as new. It is cleaned, filtered and new additives are added. When a service station changes your oil, it recycles the old oil.

There are thousands of do-it-yourself oil changers in Metro. A serious environmental problem results if this oil is not safely recycled. Used motor oil contains toxic impurities such as lead and cadmium. If oil is poured onto the ground or down the sewer, the toxic substances could eventually end up in our drinking water.

When you change your own oil, place it in a clean container, label it and take it to a Household Hazardous Waste Depot. See pages 7-8. Never mix anything with your oil.



Furnace Oil

If you are converting your oil burning furnace to another type of heating, the leftover oil can be put to good use. The Salvation Army can arrange to have your oil pumped out. They sell the oil to a dealer and use the money to help needy people pay their Hydro bills. You will receive a tax receipt for a charitable donation equal to the value of the oil.

SALVATION ARMY FAMILY SERVICES Call 285-0080 at least four weeks in advance to arrange pick-up. Small quantities of furnace oil can also be taken to a Household Hazardous Waste Depot. See pages 7-8.

Paints and Solvents

Oil based paints and paint thinners contain solvents that are flammable and evaporate quickly (therefore you breathe the fumes). Many paints contain heavy metals such as cadmium. Old paints contain lead.

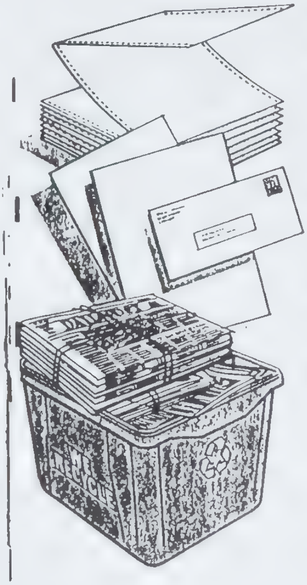
Latex paints still contain some toxic substances but don't require solvent thinners.

✓ Reduce

Buy only as much as you need to do the job. When possible use up paints completely or share with friends. Unused paint should be taken to a Household Hazardous Waste Depot. See pages 7-8.

Please do not include partly filled paint cans with your regular waste for municipal collection - they are a safety hazard to the waste collection workers.

Paper



♲ Recycle

Fine Paper

If your office throws out computer paper, letterhead, photocopy paper, or bond stock, it is throwing out a valuable resource. Fine paper, as these types of paper are called, can be recycled. Computer paper is especially valuable. A fine paper recycling program can be set up in your office. It may save you money on disposal costs and it will make better use of our resources.

Call the Metropolitan Toronto Industrial Waste Recycling Hotline at 392-4200 for a list of markets for fine paper and for assistance in setting up an office paper recovery program.

Newspaper

Newspapers are included in Blue Box programs. See pages 4, 39-40 for details on your area.

They are de-inked and repulped with new wood pulp to make newsprint or are used to manufacture products such as cellulose insulation, construction materials and cat litter. For

Paper Cont'd

more information about the recycling process, ask for factsheets from the Recycling Hotline, 960-0938.

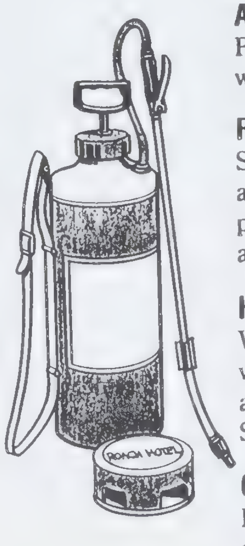
Pesticides and Herbicides

Pesticides and herbicides are poisons and can cause damage to your skin, eyes and internal organs if improperly used. They could end up in the soil and our drinking water when overused or disposed of improperly. Always follow instructions and don't allow runoff after application.

The Ministry of the Environment has factsheets describing the proper use of various pesticides as well as non-chemical alternatives where available. Call 323-5095.

Often pesticides and herbicides are used because the soil itself is unhealthy. Chemical fertilizers and poisons kill the micro-organisms that keep things in check. Feed your soil with compost or manure for healthier plants. Provide the optimum conditions for the plants you want to grow, for example, by keeping your lawn well trimmed. A healthy garden stays relatively pest-free.

ALTERNATIVES:



Ant killer

Pour a line of red chili powder, paprika or cream of tartar where they enter; tansy leaves deter ants:

Roach killer

Seal cracks around cupboards and shelves; place bay leaves around cracks; set out a dish of equal parts baking soda and plaster of paris; sprinkle icing sugar mixed with borax (only in areas not accessible to children as it's toxic).

Houseplant insecticide

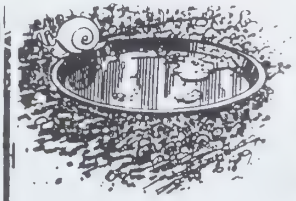
Wash leaves with soapy water and rinse; water plants with water in which you have been soaking onion trimmings: plant a garlic bud in your pot to deter red spider and aphids; use Safer's Soap.

Garden insecticides and herbicides

Provide a healthy environment for your plants; hose down strong plants to wash off insects; pull weeds; use diatomaceous earth; use plastic and other mulches to prevent weed growth

Garden insecticides and herbicides Cont'd

in the spring and fall. Some plants discourage pests on other plants: marigolds and dill discourage tomato worm on tomatoes; onion and chives near roses discourage aphids.

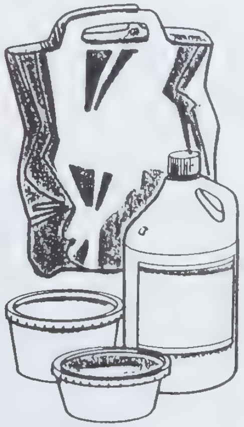


Snail and slug killer
Fill a shallow pan with stale beer and put it level with the soil. Snails and slugs will crawl in. Lay boards between rows and slugs will attach to the underside of the boards.

Earwigs
Lay a piece of hose or empty bottle among your plants at night. In the morning, empty the bottle and drown them.

Plastics

There are benefits to using plastics, but we need to use them wisely. Plastics are made from petroleum, a non-renewable resource. They take many years to break down in landfill sites. If incinerated, hazardous chemicals may be produced.



✓ Reduce

If you don't need a plastic bag, don't take one. Get into the habit of bringing a bag with you when you go shopping. Buy high quality plastic products that don't break easily.

Reuse

Save your plastic containers and bags and use them again and again. They make great lunch and storage containers.

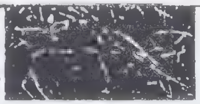
♻ Recycle

All plastic bottles and jugs, after rinsing, can be recycled in the Blue Box program. These include those used for soft drinks, bleach, shampoo, water, juice and liquid detergents.

Unfortunately, plastic tubs, such as those used for margarine or yogurt, as well as plastic wrappers cannot be recycled at this time.

Propane Cylinders

Propane cylinders are under pressure and can cause injury to sanitation workers and equipment if they explode. When purchasing a propane cylinder, ask if it can be returned for recycling or disposal when empty.

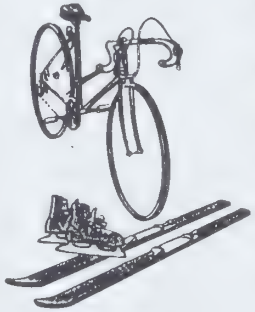


Propane Cylinders Cont'd

Propane cylinders can be returned to Superior Propane directly or through its dealers such as Canadian Tire.

Propane cylinders may also be taken to a Household Hazardous Waste Depot for recycling, but should never be included with the regular garbage collection. See pages 7-8.

Sporting Equipment



Reuse

Sporting equipment in good condition can be sold through ski/skate/bicycle exchanges. Call your local sport association or community centre for information about exchanges in your area.

Sporting equipment can also be traded in when purchasing new items. Ask your local sports store.

The Salvation Army, Goodwill Services and social service groups in your neighbourhood may accept donations of sporting goods. Call first to find out if they can use the item.

Stamps

Several non-profit organizations can use stamps from your letters and parcels to raise money for their programs.

Stamps from any country are acceptable. Leave a border of at least 1/4 inch around the stamp. Save a pile of stamps and drop them off or send them to:

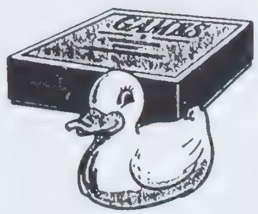
THE LEPROSY MISSION OF CANADA, 40 Wynford Drive, Don Mills, Ontario, M3C 1J5, 441-3618

OXFAM CANADA. Mail them directly to 251 Laurier Street West, Suite 301, Ottawa, Ontario, K1P 5J6 or drop them off at 175 Carlton Street, Toronto, Ontario, M5A 2K3, 961-3935.

Toys and Games

✓ Reduce

Buy good quality toys that will last. Teach your children about waste management by telling them about the resources that go into making toys and why they shouldn't be wasted. Talk to them about the garbage problem and how they can help by not buying toys that they don't need.



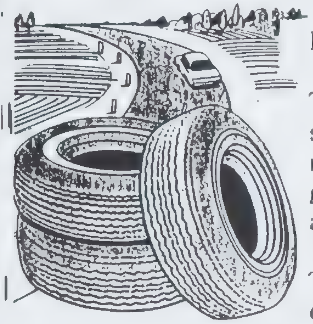
Reuse

Make toys out of household items. Half the fun of a toy can be in the making.

Give toys to relatives or neighbours when your children grow out of them. Make sure they are safe before you give them away.

See pages 35-37 for organizations that accept toy donations.

Tires



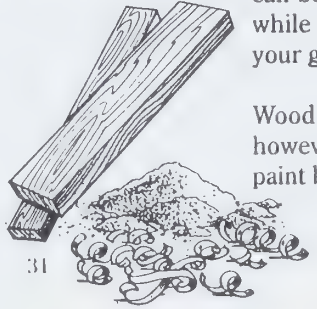
Not only do car and truck tires take up space in landfills, but they do not compact as other waste materials do and they don't readily decompose either. People discard an average of one tire a year.

Retreading tires keeps some of them out of landfill sites.

Tires are difficult to recycle because they are built to be strong. The steel or fabric belt and the metal bead around the rim must be separated from the rubber. It is very difficult to grind rubber. Most tire recyclers only deal in large quantities and you must pay them to take the tires.

The rubber itself is not used to make new tires. It is ground down to a powder and used to make rubber floor mats by several Ontario companies. Rubber can be included in asphalt used for roadways. Metropolitan Toronto is currently investigating markets for used tires and plans to ban them from all disposal facilities when a recycling alternative is developed.

Wood



Small quantities of sawdust and shavings from the workshop can be composted in your compost pile. They will take quite a while to decompose. Use some around trees and shrubs in your garden.

Wood scraps make good kindling for the fireplace. Do not, however, burn pressure-treated wood or wood with creosote or paint because of toxic gases emitted while burning.

Resources

Metropolitan Toronto Recycling Committee (MTRC)
c/o Metropolitan Toronto Works Department
439 University Avenue, 20th Floor
Toronto, Ontario, M5G 1Y8
Tel. 392-5806

Formed in 1986, the MTRC encourages the initiation of recycling programs throughout Metropolitan Toronto. Members represent Metropolitan Works Committee, each Metropolitan municipality, the Recycling Council of Ontario, and the Canadian Union of Public Employees. Representatives from the Metropolitan Works Department, the Ontario Ministry of the Environment, and companies that buy and use waste materials serve the committee in a resource capacity. The Committee reports to Metropolitan Council through the Metropolitan Works Committee.

Metropolitan Toronto Works Department
439 University Avenue, 20th Floor
Toronto, Ontario, M5G 1Y8

In an effort to reduce our dependence on landfill, the Metropolitan Works Department has undertaken a number of waste reduction and recycling initiatives. These include providing funds to area municipalities to offset the costs of recycling programs; providing services to facilitate municipal recycling programs such as the marketing and transfer of recyclable materials; the operation of composting sites; recycling depots; a permanent household hazardous waste program; a comprehensive promotion and public education program; and assisting business and industry to recycle.

Ministry of the Environment (MOE)

Public Information Centre
135 St. Clair Avenue West
Toronto, Ontario
Tel. 323-4321

The Ontario Ministry of the Environment provides the regulatory framework for waste management in Ontario. The Public Information Centre provides general information including brochures and factsheets on recycling and the 3Rs. The Centre can direct questions to a contact person in another appropriate department, such as the Waste Management or Environmental Assessment Branch.

Pollution Probe Foundation

12 Madison Avenue
Toronto, Ontario
Tel. 926-1907

The Pollution Probe Foundation, established in 1969, is a charitable organization which has initiated action on a broad range of environmental issues including industrial, municipal and household waste management, toxics, water and air quality and contaminants. The Ecology House Project, open to the public for tours, demonstrates an ecologically sensitive home with resource and energy conservation techniques.

Recycling Council of Ontario

489 College Street, Suite 504
Toronto, Ontario
Tel. 960-0938

The Recycling Council of Ontario is a non-profit, charitable organization founded in 1978. It is the Council's belief that "...society could make wiser use of the natural resources upon which it relies, by reducing needless waste and by incorporating the logic of recycling into all aspects of its use of those resources." The Recycling Council promotes reduction, re-use and recycling (including composting) in that order of priority. The Council distributes many free brochures and factsheets on the 3Rs and composting.

Solid Waste Environmental Assessment Plan (SWEAP)

Metropolitan Toronto Works Department
439 University Avenue, 20th Floor
Toronto, Ontario M5G 1Y8

SWEAP is a 20 to 40-year plan for the management and disposal of the solid wastes that are generated by the industries and 2.2 million people in Metro Toronto. Your participation is welcome in the formation of this plan over the next few years. Call 392-5420 for information about getting involved.

Toronto Recycling Action Committee (TRAC)

c/o Secretary
City of Toronto
Department of Public Works
23rd Floor, East Tower
Toronto City Hall
Tel. 392-7850

TRAC, a special committee of Toronto City Council, is made up of residents who are concerned about the impact of solid waste generation and disposal in the City of Toronto. Committee membership is voluntary and is established through a City Council appointment process. TRAC meetings are held on alternate Mondays at 7:30 p.m. in Toronto City Hall and are open to the public.

Charitable Organizations

The following service organizations in Metro accept donations of used goods. This is not an exclusive list. Explore your community for other organizations that accept goods you no longer need and let us know who they are so we can include them in future reprints of this guide.

Goodwill Industries of Toronto

234 Adelaide St. East,
Toronto, Ontario, M5A 1M9
Telephone 362-4711 for pick-up, information and location of collection boxes.

Goodwill Industries, a non-profit organization, combines employment and rehabilitation programs with business operations. It earns about 60% of its operating budget through recycling and selling of donated clothing, furniture and appliances. Through this and other operations, Goodwill employs 450 people, one quarter with disabilities. About 300 people go through their rehabilitation program each year.

Goodwill operates 200 collection boxes in the Metro area. Over the next few years, these will be phased out and replaced with Attended Donation Centres (ADCs). Watch for them.

Donated items are sorted and repaired at their processing plant. Furniture is stripped, repaired and reupholstered. Mattresses are rebuilt. Appliances are repaired. Clothing is sorted and repaired.

Goodwill accepts:
Appliances (can repair if necessary)
Books
Clothing(drop off at collection boxes or stores. Tie shoes together and pin belts to clothing - no pick-up for clothes unless they are with furniture or appliances)
Dishes and Household items (small unbreakables can go to collection boxes or store. Keep items with many parts together in plastic bags.)

Furniture (no broken springs or frames, water-damaged or pest-infested items. They will upholster and refinish. Don't leave furniture at collection boxes.)
Refrigerators, Stoves
Toys and Games (can go to collection boxes or stores.)

St. Vincent de Paul Society

240 Church St.,
Toronto, Ontario
740-9595 for pick-up, information and drop-off box locations.

The St. Vincent de Paul Society, a non-profit organization finances many of its social-service programs through the sale of donated items. Its programs include homes for deaf children, recovering alcoholics, the mentally handicapped and street people.

The Society operates 20 drop-off boxes and nine stores in the Metro area.

St. Vincent de Paul accepts:
Small appliances (in good repair)
Books (take to drop-off boxes or stores)
Clothing, Shoes, Purses (take to drop-off boxes or stores)
Furniture (in good repair)
Household Items, Kitchen Utensils (take small items to store or drop-off boxes if possible)
Mattresses (only in good repair)
Toys and Games (wrap well so pieces don't get lost)

Salvation Army Family Services

100 Lombard Street,
Toronto, Ontario
366-4686 for pick-up, information and drop-off locations

The Salvation Army operates many social service programs in the Metro area that are partially funded through the sale of donated items.

They operate 70 drop boxes and 15 stores in the Metro area. In addition to clothing, furniture and appliances, they accept office equipment and commercial goods, used cars and furnace oil from homes removing their oil furnaces.

You can get a charitable donation receipt for the value of donated objects. For items over $1000.00, an estimate of value from an outside party is needed. This is especially useful for businesses that have saleable product over-runs or old office equipment to donate.

The Salvation Army accepts:
Appliances (no freezers or automatic washers unless they are apartment size). Small appliances can be repaired (no large stereos)
Bicycles (in good repair)
Cars (see page xx)
Carpet (in good shape)
Clothing (take to drop-off boxes or stores)
Commercial Goods, Office Equipment
Dishes and Household Items
Furniture (not stained or torn)
Lawnmowers and Snowblowers
Mattresses (only in good repair)
Toys and Games

Tools for Peace

347 College Avenue,
Toronto, Ontario
922-0852

Tools for Peace, a non-profit material aid campaign, sends useful items to Nicaragua. They collect materials from across Canada from September to December. In the spring, the items are shipped from Vancouver to Nicaragua.

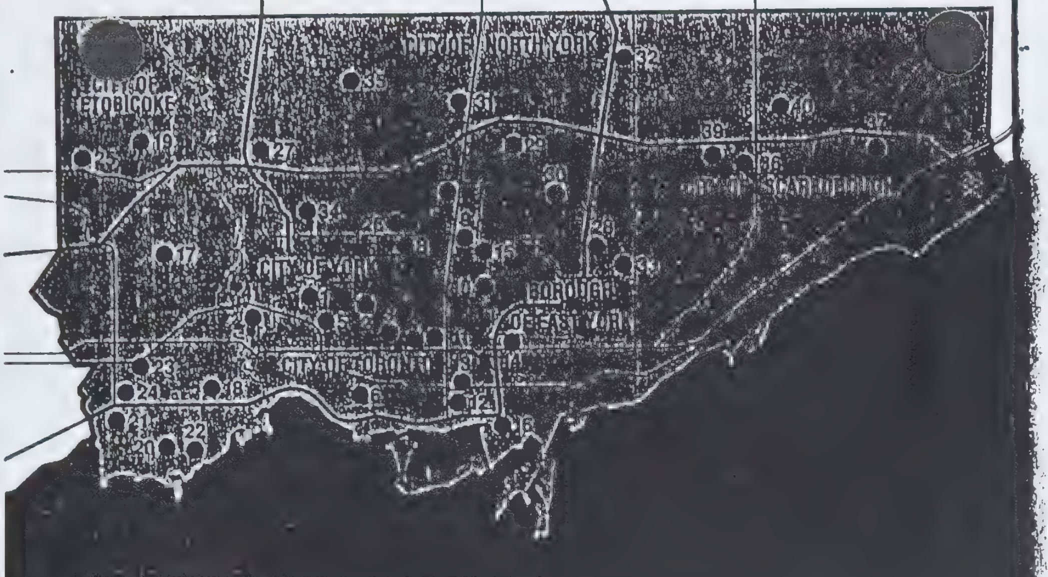
Items needed include:
Garden and hand tools
Small farm implements
Rubber boots
Health and safety equipment (nearly new)
Unused office paper

Canadian Foundation for World Development

2441 Bayview Avenue,
Willowdale, Ontario
445-4740

The Canadian Foundation for World Development, a volunteer organization, sends material aid and assistance to Guyana, Guatemala, Haiti, Honduras, Jamaica and Mexico. Most of their volunteers are senior citizens.

Items needed include:
Eyeglasses (50,000 pairs,a year)
Hospital equipment
Sewing machines
Shovels and hand tools
Surplus equipment of all types
Typewriters
Welding equipment



Recycling Depot Locations in Metropolitan Toronto

KEY

g - glass bottles and jars
c - metal cans
n - newspapers
p - plastic bottles
f - fine paper
b - batteries
n/o - newspaper and corrugated cardboard
occ - corrugated cardboard

City of Toronto

1. 425 Old Weston Rd. .... g,c,b
(Public Works Yard)

2. 95 Regal Rd. .... g,c,b
(Regal Rd. Public School)

3. 500 Dupont St. .... g,c,b
(Brewers Retail Store)

4. 12 Madison Ave. .... g,c,b
just north of Bloor

5. Old Weston Rd., ... g,c,b
west of Dundas St. & Dupont St.

6. 1116 King St. W. .... g,c,b
(Public Works Yard)

7. Yonge St. at Bedford Park Ave. ..... g,c,b
(A & P parking lot)

8. 625 Castlefield Ave. .... g,c,b
east of Bathurst St.

9. Redpath Ave. .... g,c,b
north of Erskine Ave.

10. Bayview Ave. .... g,c,b
north of Davisville Ave.
(Mr. Grocer's parking lot)

11. 1008 Yonge St. .... g,c,b
(Public Works Yard)

12. The Esplanade .... g,c,b
east of Jarvis St.

13. 227 Gerrard St. E. .... g,c,b
(Brewers Retail Store)

14. Erindale Ave. .... g,c,b
east of Broadview

15. Bayview Ave. & Eglinton Ave. ...... g,c,b
(Dominion parking lot)

16. 475 Commissioners St. .... occ
(Paperboard Industries)
Mon.-Fri. 8 a.m. - 8 p.m.
Sat. 7 a.m. - 11 a.m.

City of Etobicoke

17. Islington Ave. / Eglinton Ave. .... g
(Firehall)

18. Royal York Rd. / Queensway .... g
(Firehall)

19. Kipling Ave. / Rexdale Blvd. .... g
(Firehall)

20. Eighth St. / Lakeshore Blvd. .... g
(Firehall)

21. Luness Dr. / Horner Ave. .... g
(Firehall)

22. 70 Burningham St. c
(Continental Can Ltd.)

23. 66 Shorncliffe Rd. .... f
(Domtar Packaging Ltd.)
Mon.-Fri. 7:30 a.m. - 4:30 p.m.

24. 123 Eastside Dr. Unit 7 .... n
(Buscombe and Dodds)
Mon.-Fri. 8:30 a.m. - 3:30 p.m.

25. 120 Disco Rd. .... g,c,p,n/o
(Disco Transfer Stn.)
Mon.-Fri. 4 p.m. - 6 p.m.
Sat. 7 a.m. - 12:30 p.m.

City of North York

26. Bathurst St. .... g,c
north of Lawrence Ave. (Library)

27. Jane St./ Wilson Ave. .... g,c
(Sheridan Mall)

28. Wynford Hts. Cres. .... g
off Don Mills (Plaza)

29. Bayview Ave./ York Mills Ave. .... n
(Church)
Sun. 10 a.m. to 12 noon

30. 230 Donway West .... n
(Church - leave at shed)

31. North York City Hall .... f
(outside Mayor's office)

32. 3350 Victoria Park .... g,c,p,n/o
(Victoria Pk Transfer Stn.)
Mon.-Fri. 4 p.m. - 7 p.m.
Sat. 7 a.m. - 12:30 p.m.

33. 188 Bermondsey Rd. .... g,c,p,n/o
(Bermondsey Transfer Stn.)
Mon.-Fri. 7 p.m. - 7 a.m.
Sat. 7 a.m. - 12:30 p.m.

34. 50 Ingram Dr. .... g,c,p,n/o
(Ingram Transfer Stn.)
Mon.-Fri. 7 p.m. - 7 a.m.
Sat. 7 a.m. - 12:30 p.m.

35. 35 Vanley Cres. .... g,c,p,n/o
(Dufferin Transfer Stn.)
Mon.-Fri. 4 p.m. - 6 p.m.
Sat. 7 a.m. - 12:30 p.m.

City of Scarborough

36. Midland/Ellesmere .... g,c,n,oil
(Public Works Yard)

37. Morningside Ave./Hwy 401 .... g,c,n
(Public Works Yard)

38. Lawrence Ave. East & .... g,c
Pt. Union Rd. (GE)
Sat. 10 a.m. - 12 noon

39. 111 Progress Ave. .... occ
(Atlantic Packaging)
Mon.-Fri. 8 a.m. - 4 p.m.

40. Scarborough Transfer Stn. ... g,c,p,n/o
South from Nugget Ave.
west of Markham Rd.
Mon.-Fri. 4 p.m. - 8 p.m.
Sat. 7 a.m. - 12:30 p.m.

City of York

41. Jane St./Page .... g,c
(Firehall)

Produced by the Metropolitan Toronto Works Department with thanks to the Metro Toronto Recycling Committee and the City of Toronto, Department of the City Clerk, Information and Communication Services Division.

This guidebook provides a compilation of information on various waste reduction opportunities available in Metropolitan Toronto. While every effort has been made to make listings complete and accurate, Metropolitan Toronto assumes no responsibility for the information contained in this booklet, nor for the services provided by the listed organizations. All organizations should be contacted directly for information on the extent and nature of the services they provide.

Metro Toronto Works Department

SWEAP

Notes

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THE REGIONAL MUNICIPALITY OF HAMILTON-WENTWORTH
CHAIRMAN'S ADVISORY COMMITTEE ON ENVIRONMENTAL ISSUES

AGENDA

DATE AND TIME: Friday, February 9, 1990
8:30 a.m.

PLACE: Committee Room, 15th Floor
Regional Offices

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1. GENERAL

- a) **Declaration of Interest** re: Municipal Conflict of Interest Act
- b) **Minutes of Chairman's Advisory Committee on Environmental Issues Committee Meeting - January 12, 1990**
  Be received and adopted.
- c) **Errors and Omissions**
- d) **Business Arising out of Minutes**
- e) **Delegations:**
  - **Hamilton Harbour Remedial Action Plan**
    Presentation by Dr. K. Rodgers from the Canada Centre for Inland Waters
  - **Zebra Mussel Contamination of the Municipal Water Supply System**
    Mr. B. McHattie to advise the Committee on what steps the Government is taking on this item

2. NEW BUSINESS

2.1 **FOR THE INFORMATION OF THE COMMITTEE**
That the following items be received for information:

- (a) **Letter from P. Muldoon, R. Baetz, and B. McHattie** on the reporting aspect of this Committee and a document titled "Promises and Reality Which Outlines The Results Of A Workshop On Environmental Advisory Committees".
- (b) **Disposal Diapers and the Environment**
- (c) **Noranda Thorold Plant** gets $7M for recycling
- (d) **Greenpeace** urges support of the adoption of a CFC Control By-law.
- (e) **Greenprint for Canada** - A Federal Agenda for the Environment

3. NOTICES RE: MOTIONS

4. OTHER BUSINESS

5. QUESTIONS OF THE DAY/ANNOUNCEMENTS

6. ADJOURNMENT

Ruth Greenwood
Hamilton Public Library
Urban Municipal Collection, 2nd Floor
55 York Boulevard
Hamilton, Ontario
L8R 3K1 (PI)

2.1(a)

November 20, 1989

Mr. John Prentice,
Chairman,
Chairman's Advisory Committee on
Environmental Issues,
Regional Municipality of Hamilton-Wentworth,
71 Main Street West,
Hamilton, Ontario.

Dear Mr. Prentice,

At the last meeting of the Chairman's Advisory Committee on Environmental Issues, there was some discussion on a number of issues pertaining to: the role of the committee, what bodies it should report to, and how matters are referred to it. At the time, you informed the Committee that you would contact Regional Chairman Reg Whynott to further discuss these issues. To assist in this discussion, we would like to outline some of our thoughts and concerns and ask you to make them known to Mr. Whynott.

When reflecting upon the discussion at the previous meeting, we believe that there are two issues which must be addressed. These issues are: (1) What regional committees should the Chairman's Advisory Committee on Environmental Issues (CACEI) report to in order to fully discharge its mandate? and (2) What mechanisms or requirements should be in place to ensure that the appropriate and relevant matters are before the CACEI? These issues are discussed below.

(1) What Regional Committees should the CACEI Report to?

At the present time, the CACEI reports its recommendations solely to the Engineering Services Committee. Certainly, many important environmental issues are dealt with by this Committee, and hence, it is appropriate that the CACEI retains its ability to make recommendations to this Committee. However, it is our belief that, if the CACEI is to fulfill its mandate, it must also have the ability to report and make recommendations to the Economic Development and Planning Committee. In effect, what is being suggested is that the CACEI have the ability to make recommendations to both the Engineering Services Committee and the Economic Development and Planning Committee. The rationale for this dual reporting structure is as follows:

(a) The Planning Department has an incredibly important role to play in the protection and improvement of the Region's environment. For example, the Department at this moment is studying how sustainable development principles can be integrated into the planning process, and in particular, the Official Plan. It is also undertaking a State of the Regional Environment report. The Department also deals with the designation of Environmentally Significant Areas (ESAs) and approvals concerning development with those areas. These are just a few of the initiatives which the CACEI should provide review and comment. By having input in the planning process, it will become possible to take a more "proactive" approach to environmental issues rather than a crisis-by-crisis "reactive" approach.

(b) In all other regions where there are bodies such as the CACEI, those bodies report to a committee equivalent to the Economic Development and Planning Committee. Attached please find a document entitled EEAC: Promises and Reality, a document which outlines the results of a workshop on Environmental Advisory Committees. From that document, it is evident that all other advisory bodies believe in the need to have input in the planning process.

(c) Under the CACEI's current terms of reference, there are various matters which the committee cannot deal with unless it does have the ability to report to the Economic Development and Planning Committee. For example, the CACEI is delegated the task of reviewing matters dealing with "Natural Areas". But how can it undertake this task if most of the work pertaining to this matter is not dealt with by Engineering Services Committee, but by the Economic Development and Planning Committee?

In summary, we believe that the reporting routes of the CACEI should be expanded to include the Economic Development and Planning Committee.

(2) Ensuring that the Appropriate Matters are Referred to the CACEI

Since the inception of the CACEI, one of its perceived weaknesses is that there is little or no direction as to what the Engineering Services Committee should refer to the CACEI. As a result, some important matters are referred to the CACEI and other are by-passed. It is our belief that both the Engineering Services Committee and the Economic Development and Planning Committee should be required to refer matters that have an environmental dimension to the CACEI for review and comment. If necessary, guidelines can be drafted which outline what is meant by an "environmental dimension". The end result is that there will be some certainty as to what items should or should not be referred to the CACEI.

Although it may seem that both our recommendations will add to the workload of the CACEI, it is our belief that the workload will still remain manageable. There are many options open to CACEI to deal with this increased workload, such as forming subcommittees. At any rate, it is for the CACEI to decide what level of activity it can handle, and then take appropriate action.

We sincerely believe that the CACEI does and will continue to serve a valuable and useful role in the Region. Our desire is to enhance that role for the betterment of the Region. We hope that you sincerely consider our comments and relay them to the Chairman's office.

Thank you for your time and consideration in dealing this very important matter, and we look forward to seeing you at the next meeting of the CACEI.

Best wishes.

Yours very truly,

Paul Muldoon
Hamilton
Environmental
Action Team
(H.E.A.T.)

Rashne Baetz
Conserver Society
of Hamilton and
District

Brian McHattie
Hamilton Naturalists'
Club

cc. Members of the Chairman's Advisory Committee on Environmental Issues

EEAC: PROMISE AND REALITY

Notes from the Intermunicipal EEAC meeting held Saturday, June 17, 1989 in Guelph, Ontario from 9:00 a.m. to 1:30 p.m. The Waterloo, Halton and Niagara EEACs co-sponsored the meeting with the Waterloo EEAC and its chairman, Mark Dorfman, acting as host.

Attendance

Niagara EEAC:

Charlie Pryer (Chairman)
Mike Collins (Vice-Chairman)
Rick Brady
Ron Caston
Phyllis Kerkhoven
Mike Dickman
Greg Faraday
Stan Petit
Allan Veall
David Miller (Staff)
Don Campbell (Staff)
Kim Fowler (Staff)

Halton EEAC:

Debbie Ramsay (Chairperson)
Douglas Banting (Vice-Chair)
Brenda Axon (Vice-Chair)
David Greenfield
Peter VanDijken
Nancy Tilt
Mike Bensen

Waterloo EEAC:

Mark Dorfman (Chairman)
Ray Tufgar
Diane Damman
Shirley Rosenburger
Gordon Murchison
Harry Pal
Walter Grazieni
Frank Watty (Staff)
Sally Thorsen (Staff)

Others:

Terry Grawey (City of London)
Brenda Phillips (Stratford)
Jamie McEwen (Region of Durham)
Christine Kowalyk (Ministry of Municipal Affairs)
Nancy McMinn (London)
April Ionson (Greater Thames Conservation Authority)

Introduction

The meeting was meant as an opportunity for EEAC members and supporting staff to examine together their experiences, challenges and prospects. Two general objectives were set for the meeting:

1. To learn from the successes and difficulties of other EEACs and explore differences and common challenges.

2. To discuss the possibility of organizing a larger joint forum to be hosted by Niagara in the Fall.

The meeting was organized around four sessions:

- Organization (Membership, Composition, Procedures).
- Mandate and Activities
- Making the Process Work
- Fall Conference

EEAC Organization

Chaired by Mark Dorfman (Waterloo EEAC)

Panel:
Mike Collins (Niagara EEAC)
Brenda Axon (Halton EEAC)
Diane Damman (Waterloo EEAC)

Each EEAC representative gave a short description of their EEAC. Topics covered included membership, composition, procedures and relationships of staff, council, government agencies. The following chart summarizes the basic characteristics of each EEAC.

Halton	Niagara	Waterloo
18-23 Members including 1 Councillor	21 Members including 6 Councillors	12 Members with No Councillors
Indefinite term. Vacancies filled in groups of 4 or 5 (approximately every 2 years) Vacancies advertised.	3 year term. EEAC replaced or reappointed with new Council. Advertises for new members.	3 year term. At least 4 re-appointed or replaced each year.
New members selected by existing EEAC and staff Endorsed by Council	Councillors appointed by Planning, Public Works, and Human Service Committee. These Councillors select lay members with staff assistance. Endorsed by Council.	New members recommended by staff, endorsed by Council.
Members represent a mix of expertise based on working or professional experience. Members come from public, private and academic backgrounds.	Members represent a mix of expertise as well as political and community representation	Members represent a mix of expertise. Close relationship with gov't agencies.

Halton	Niagara	Waterloo
Chairperson elected annually	Chairperson elected for 3 year term	Chairperson elected annually
Forms Subcommittees to examine specific issue or proposal	Has 3 formal Subcommittees - Natural Areas - Waste Management - Water Technology	Makes occassional use of Subcommittees
Meetings are Public	Meetings are Public	Meetings are Public with agendas sent to media.
Has a basic operating budget (conferences, mileage, etc) as well as some funding for special projects	Has a basic operating budget	Has a basic operating budget with additional funding for special projects
Reports to and advises Planning and Development Committee	Reports to and advises Council through Planning Committee	Reports to Planning and Development Committee
Items generally referred by staff to EEAC	Items referred by Council (usually through staff) or raised by an EEAC member	Items referred through staff (procedure outlined in Official Plan)

One of the more interesting differences between EEACs was the level of political representation. This ranged from no representation on the Waterloo EEAC to significant involvement at Niagara. Having political representation can increase political awareness improve communication, and forge a closer link with Council. Some, however, questioned whether this representation could potentially politicize EEAC decisions.

Mandate and Activities

Chaired by: Debbie Ramsay (Halton EEAC)
Panel: Don Campbell (Niagara Staff)
Doug Banting (Halton EEAC)
Ray Tufgar (Waterloo EEAC)

The basic mandate and activities of each EEAC were discussed in this session. On a general level, the mandates of the three EEACs are similar. Each EEAC is primarily charged with providing technical or expert advice to its respective Council. Beyond this general statement, however, each EEAC pursues and interprets its mandate in different ways.

Halton EEAC:

The Halton EEAC fulfills its mandate primarily through four functions:

- Review of development applications in Environmentally Sensitive Areas (ESAs);
- Review of Environmental Impact Assessments;
- Monitoring of activities in ESAs; and
- Providing a public awareness program on Halton's natural environment.

In terms of development review, the EEAC can be involved in providing basic comments or suggesting terms of reference for an environmental study. They will also review study results and may contribute information. There has been some involvement in general topics and issues with environmental concerns, like the closure and after-use of the Burlington landfill. Ongoing initiatives related to ESAs include maintenance of an environmental data bank and the review and update of ESA designations.

Educational efforts of the Halton EEAC have led to participation in environment week, tours of the Region, and production of a brochure on Halton's Natural Environment.

Waterloo EEAC:

The mandate of the Waterloo EEAC is established in relatively detailed terms of reference. The role of EEAC in the review of development proposals affecting ESAs is also outlined in the Regional Official Policies Plan. This review process is the priority commitment at present. The basic roles of the EEAC are (in order of current priority):

1. Plan Review
2. Technical Advice
3. Monitoring
4. Education.

Other projects of note include:

- A State of Environment report for the Region with an Environmental Planner who will work with EEAC. Part of the development of this report will involve the establishment of an emminent persons committee for community outreach.
- Providing advice to private landowners with particular ESAs assigned to EEAC members.

- Assisting in ESA policy development and the formulation of management plans for ESAs.

- Producing programs on the environment for the local Cable T.V. station.

Niagara EEAC:

The Committee's mandate is to provide technical advice to Council on environmental matters. A relatively flexible approach has evolved towards fulfilling this mandate. The Committee's terms of reference set out in general terms how items may come before EEAC. First, a Standing Committee of Council may refer a matter to EEAC. This usually occurs on the recommendation of staff or the initiative of an individual Councillor. Secondly, EEAC may itself raise topics that it wishes to pursue. Issues addressed have ranged from specific development proposals to broad policy issues.

In terms of development proposals, the mandate has not been tied strictly to ESAs. Specific development proposals (subdivisions) are not routinely reviewed. Rather, EEAC has played a role in such issues as:

- Proposed amendments to the Niagara Escarpment Plan

- Review of Provincial Policy Statements (Wetlands)

- Review of plans for the Ontario Waste Management Corporation facility

- Review of plans for a Regional Environmental Lab

- Participation in Environmental Assessments.

- Review of the Region's sewage sludge management program.

EEAC has also been discussing sustainable development and the World Conservation Strategy. A slide show was produced and shown to Regional Council and carried on the local Cable T.V. Station. Regional Council has also requested EEAC to advise on the possibility of a Regional environmental award.

The most striking difference between the mandate and activities of the EEACs is in the area of development review. Waterloo and Halton EEACs are regularly involved in the review of development proposals in or adjacent to ESAs while Niagara EEAC is not. On the other hand, Niagara EEAC reviews some larger issues or proposals, like the OWMC or Niagara Escarpment Plan Amendments, which are not commonly addressed by the other EEACs. The basic issue of whether the mandate of EEACs is best served by concentrating on specific proposals which are subject to extensive staff review, or by raising and exploring broader issues received some discussion.

While some differences among EEACs surfaced, it was also apparent that some common issues related to mandate and priorities were being faced. Education is one area which all three EEACs recognize as important but are searching for appropriate ways to fulfill their mandates in this area.

Making the Process Work

Chaired by: Charlie Pryer (Niagara EEAC)
Panel: Debbie Ramsay (Halton EEAC)
Rick Brady (Niagara EEAC)
Frank Watty (Waterloo Staff)

Have EEACs been effective and what is required to make the process work? This is the question which was discussed in the third session. Consistency, demonstrated expertise, and credible information were initially suggested as three important factors in making the process work.

Both the Halton and Waterloo EEACs offered comments on the development review process. It was observed that there has been a turn around in the attitudes of the development industry towards EEAC participation. Not only are EEAC comments recognized as a part of the process, but have resulted in improved developments.

When participating in the development review process, it is important to provide input which is:

- expeditious, timely, and cost effective
- based on defensible information.

In this regard, Halton and Waterloo have compiled environmental data banks. Making this information available to developers establishes trust and credibility. It is also important for EEAC decisions to be seen as being consistent.

In assessing the effectiveness of the process, an important contrast was discussed. The Waterloo EEAC works in a relatively structured way while Niagara has a very flexible approach (Halton appears to be somewhere in between). As a result, the outcome of efforts of the Niagara EEAC is often less tangible or obvious. The comment was made that while Niagara EEAC may not always be consistent in procedure or format, it is fair and professional in the advice that it offers. This advice provides a technical view, but may also increase awareness or ensure that a particular issue or viewpoint is considered in the process.

As an actor in the process of promoting sound environmental and resource management, it was suggested that EEACs should be aware of:

- their ability (and obligation?) to take a broad, interdisciplinary perspective when reviewing proposals - as opposed to the compartmentalization of government agencies constrained by limited mandates.
- the need to educate their audience (community, political) and not be elitist.
- the importance of the landowner, both as a manager of land and an important source of information.

Most participants had a positive view of the process. EEAC participation was seen to be effective in varying degrees. However, several questions emerged and the response to these challenges will play a role in determining future prospects for EEACs.

- Are EEACs dealing with specific issues without having a broader picture of what is actually happening? Environmental monitoring may deserve a higher priority.
- What is the role of EEACs in education? Awareness needs to be increased to make the process work but the role of EEACs is not established. Once again, this is an area in which some participants advocated an expanded role with either the political or general community as the target.
- How should EEACs respond to the larger issues inherent in sustainable development? This is an area which goes beyond the traditional activities of some of the EEACs.

Fall Conference

Chaired by: David Miller (Niagara Staff)

The final session was dedicated to discussing a possible conference in the Fall. This conference would be co-sponsored by the EEACs but could be larger than the inter-EEAC meeting and include other groups or individuals. Niagara EEAC could act as host.

It was first established that the consensus at the meeting was that a follow-up conference in the Fall was an appropriate and worthwhile idea to pursue. Once it was agreed that efforts should be made to organize a conference in the Fall, attention was focussed on what the objective, target group and theme of the Fall conference should be.

The basic decision faced was should the conference be

- aimed at learning more about EEACs and the advisory process, possibly using some case studies or examining issues in more detail

OR

- aimed at a particular theme or topic.

During discussion of this question, a number of points were made:

- the conference should not be aimed just at EEACs but also at others with an interest. This could include government agencies, community groups, municipalities, and areas interested in forming advisory committees.
- it is important to have a theme if the conference is to attract any attention. Specific suggestions included Global Climate Change, Waste Management, Water Quality.
- it is necessary to put a 'human face' on the environment. This is a matter of survival and every individual should be contributing to the solution. This message should be the ultimate purpose or foundation of the conference.
- many of the topics and issues discussed relate to sustainable development. Think Globally and Act Locally has been suggested as a theme. This would lead to a broader environmental scope with the conference organized as a round table. It could focus on defining the term sustainable development at a community level and to explore how and which environmental group should 'speak for' environmental issues at this community level. It was also suggested that the leading economic issue is 'growth' and that it can be translated into environmental terms in this discussion.
- it is important to define exactly who the target group is. That will have a bearing on the theme of the conference.
- it is also important to consider logistics at an early stage.

While no consensus on these various views was reached, it was suggested that many of the objectives expressed were in fact compatible. As a starting point, it was suggested that:

- the conference continue to explore some of the common EEAC issues identified at the interEEAC meeting.

- a particular theme or topic be defined to act as a focus.
- the conference involve a broader group with a higher profile but at a scale that is manageable. Invitations to selected target groups may be one option.

In conclusion, it was agreed that the inter EEAC coordinating Committee should draft an initial proposal for consideration by each EEAC so that any necessary approvals can be obtained.

Prepared by,

David Miller

David Miller

1224B

E'RE STARTING UP NEW RECYCLING AND COMPOSTING PROGRAMS FOR DISPOSABLE DIAPERS.

With the cooperation of local governments and waste management firms, we're sponsoring the development of two new processes to prevent disposable diapers ending up in garbage disposal sites.

☐ OUR RECYCLING PROJECT. In one test city[4] disposable diapers are being picked up, then processed to separate pulp from plastic. Both pulp and plastic are sanitized, then the pulp is used to make cardboard boxes. The plastic goes into making garbage bags and flowerpots.

☐ OUR COMPOSTING PROJECT. Since 1988, we've been helping another city[5] to odourlessly compost disposable diapers along with other compostable waste[6] Once the plastic has been skimmed off for recycling, the rest is sanitized and turned into topsoil for gardening. Already, a dozen or so communities are planning to adopt this process.

And it seems that both recycling and composting could be highly cost-efficient alternatives to using up garbage disposal site space.

FEW OTHER THINGS WE'D LIKE YOU TO KNOW.

1. We plant more than one new tree for every tree we cut down to make pulp for Pampers[7]
2. The pulp-making plant that provides pulp for all Pampers made in Canada has won impressive environmental awards[8]
3. Pampers' packaging is recyclable where plastic film recycling is available.
4. The process used for Pampers produces a pulp that is purer, more absorbent, and less likely to bunch up when wet than the pulp produced by other methods[9]
5. Pampers have proven time and again to keep babies drier than cloth diapers and at least as dry as other disposables[2] thereby reducing the likelihood of serious diaper rash![10]

Pampers

NOUS AMORÇONS UN NOUVEAU PROGRAMME DE RECYCLAGE ET DE COMPOSTAGE DES COUCHES JETABLES

Grâce à la collaboration des municipalités et des entreprises de gestion des déchets, nous commanditons le développement de deux nouveaux procédés qui préviendront l'accumulation de couches jetables dans les sites d'enfouissement.

☐ NOTRE PROJET DE RECYCLAGE. Dans une ville-pilote[4] nous ramassons les couches jetables. Nous les désinfectons et nous les traitons pour séparer la pulpe du plastique. La pulpe sert à fabriquer des boîtes de carton alors que le plastique sert à la fabrication de sacs à déchets et de pots à fleurs.

☐ NOTRE PROJET DE COMPOSTAGE. Depuis 1988, nous aidons une autre ville[5] à décomposer mécaniquement et sans odeur ses couches jetables et ses autres rebuts[6] Une fois que le plastique a été séparé pour être recyclé, ce qui reste est désinfecté et transformé en terreau pour le jardinage. Une douzaine de communautés ont déjà adopté notre procédé.

Et, d'après notre expérience, le recyclage et le compostage s'avèrent des solutions de rechange très économiques par opposition aux sites d'enfouissement municipaux.

VOICI D'AUTRES FAITS

1. Nous plantons plus qu'un jeune arbre chaque fois que nous devons en abattre un pour fabriquer la pulpe de la Pampers[7]
2. L'usine de pulpe qui sert à la fabrication des couches Pampers dans tout le Canada a remporté plusieurs prix pour son respect de l'environnement[8]
3. L'emballage de la Pampers peut être recyclé là où des installations de recyclage du plastique sont disponibles.
4. Le procédé spécial qui sert à la fabrication des Pampers donne une pulpe plus pure, plus absorbante et beaucoup moins susceptible de se comprimer au contact de l'humidité que les autres procédés[9]
5. La Pampers a prouvé depuis longtemps qu'elle pouvait rester plus sèche que les couches de coton et tout aussi sèche que les autres couches jetables[2] et prévenir ainsi les irritations cutanées chez les bébés![10]

Pampers

EL

ISPOSABLE DIAPERS AND THE ENVIRONMENT.

LES COUCHES JETABLES ET L'ENVIRONNEMENT.

Facts you should know and things that we're doing so that Pampers make good environmental sense.

Voici quelques faits que vous devez savoir concernant Pampers et son souci de l'environnement

PRINTED ON RECYCLED PAPER.

IMPRIMÉ SUR DU PAPIER RECYCLÉ.

2.1 (b)

Like other industrialized nations, Canada is facing a shortage of garbage disposal space. At Pampers, we've been working hard to minimize our contribution to the problem.

OW WE'VE REDUCED THE AMOUNT OF SPACE DISPOSABLE DIAPERS TAKE UP IN GARBAGE DISPOSAL SITES.

In 1986, Pampers led the switch from thick to thin diapers, reducing diaper thickness by 50%. Today, disposable diapers take up less than 2% of space in residential garbage disposal sites.[1]

In 1986, the changeover to new packaging has reduced Pampers packaging waste volumes by 90%.[2]

HY RECYCLING AND COMPOSTING ARE BETTER FOR THE ENVIRONMENT THAN BIODEGRADABLE DIAPERS.

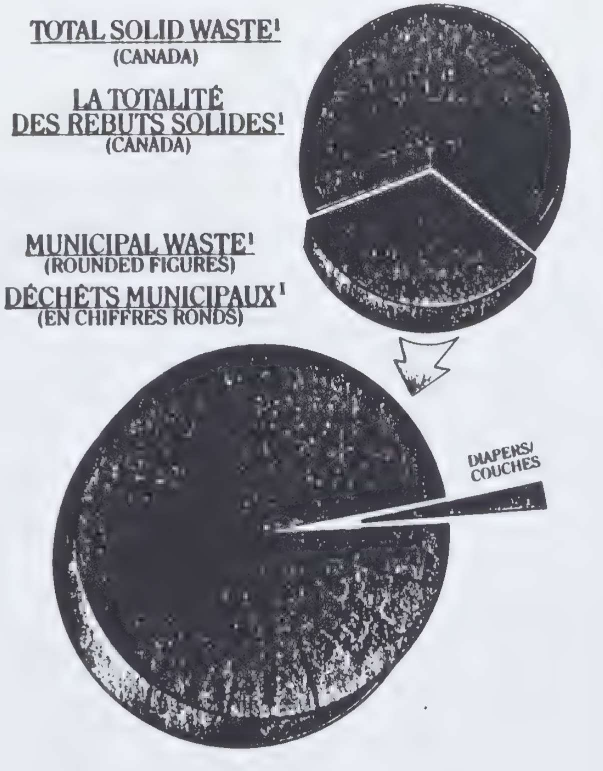
Most of what goes into garbage disposal sites is biodegradable,[3] including over 70% of the material in disposable diapers.[2] Unfortunately, though, nothing biodegrades much in garbage disposal sites.

The problem is, city disposal sites aren't like backyard compost heaps. They're specially constructed to be as airtight and watertight as possible. And without air or water, biodegradable materials can't break down. In fact, 25-year-old newspapers, carrots and even hot dogs have been unearthed in garbage disposal sites in nearly perfect condition.[3] That's why a fully-biodegradable diaper isn't the solution to the problem of diaper volumes in garbage disposal sites. Biodegradability will require significantly more research and development before it is proven to be effective.

Fortunately, there are two better alternatives: recycling and composting (which we're currently testing). Turn the page and find out more.

OLD PAMPERS
ANCIENNE PAMPERS

NEW PAMPERS
NOUVELLE PAMPERS



NEWSPAPER BURIED IN DISPOSAL SITE SINCE 1976

JOURNAL ENTERRÉ DANS UN SITE D'ENFOUISSEMENT DEPUIS 1976

Pampers are made by Procter & Gamble, a leading manufacturer of consumer products with a corporate commitment to "minimizing the impact of its products and packaging on the environment and on solid waste disposal".	Les Pampers sont faites par Procter & Gamble, un important fabricant de produits de consommation qui s'est engagé à ce que ses produits et ses emballages contribuent le moins possible à la pollution et au problème des déchets solides.

Comme la plupart des autres pays industrialisés, le Canada fait face à une pénurie d'espace pour jeter son trop-plein de déchets. Chez Pampers, nous travaillons dur pour diminuer la part de déchets que nous produisons.

VOICI COMMENT NOUS AVONS RÉDUIT L'ESPACE QU'OCCUPAIENT LES COUCHES JETABLES DANS LES SITES D'ENFOUISSEMENT

En 1986, Pampers a pris les devants en créant la couche mince. Nous avons réduit l'épaisseur des couches de 50 %. Résultat? Les couches jetables occupent maintenant moins de 2 % de la superficie des sites d'enfouissement municipaux.[1]

En même temps, nous avons opté pour un nouvel emballage en plastique qui a réduit de 90 %[2] la surface qu'occupaient les emballages dans les sites d'enfouissement.

POURQUOI LE RECYCLAGE ET LE COMPOSTAGE SONT-ILS PRÉFÉRABLES AUX COUCHES BIODÉGRADABLES POUR LA PROTECTION DE L'ENVIRONNEMENT?

Presque tous les déchets qui aboutissent dans les sites d'enfouissement municipaux sont biodégradables[3] y compris 70 % des matériaux qui composent les couches jetables.[2] Mais malheureusement, bien peu se désintègrent dans les sites d'enfouissement.

Le problème c'est que nos sites d'enfouissement municipaux ne sont pas conçus pour produire du compost. Ils sont construits pour être le plus hermétique possible. Et, sans air ni eau, la matière biodégradable ne peut pas se désintégrer. À titre d'exemple, des journaux de 25 ans, des carottes et même des «hot dogs» ont été déterrés intacts après plusieurs années passées dans les sites d'enfouissement.[3]

Donc, en se basant sur l'expérience actuelle, on constate que même des couches jetables entièrement biodégradables ne peuvent pas régler le problème des couches dans les sites d'enfouissement. Il faudra encore poursuivre de nombreuses recherches pour prouver l'efficacité du biodégradable. Heureusement, il existe deux solutions: recycler et composter (ce qui se teste présentement). Tournez la page et lisez ce qui suit.

---

1. SWEAP–Solid Waste Environmental Assessment Plan for the Municipality of Metropolitan Toronto and the Regional Municipalities of Durham and York, Metropolitan Toronto Works Department 1989; GPMC–Grocery Products Manufacturers of Canada, Environmental Background Report, Solid Waste Management, 1988; Dr. W.L. Rathje et al., Source Reduction and Landfill Myths, 1988; Franklin Associates Ltd., Characterization of Municipal Solid Waste in the United States 1960 to 2000, 1988. 2. Procter & Gamble Inc. 3. Dr. W.L. Rathje et al., Source Reduction and Landfill Myths, 1988. 4. Seattle, Washington. 5. St. Cloud, Minnesota. 6. Estimates indicate that 70% of a community's garbage would be suitable for composting. A.S. Razvi, et al., Composting Municipal Solid Wastes, Waste Age, (1989)./On estime que 70 % des déchets municipaux pourraient servir à fabriquer du compost. A.S. Razvi, et al., Composting municipal Solid Wastes, Waste Age, (1989). 7. Procter & Gamble Cellulose Company USA. 8. Izaak Walton League Award, Georgia Wildlife Federation. 9. Stora Cell AB, Sweden 1989, Comparison of Chemical Fluff Pulp and CTMP Fluff and Their Impact on the Environment. 10. Journal of the American Academy of Dermatology (1987), Journal of Clinical Microbiology (1987), Pediatrician (1987), Adv. Dermatology (1988), Pediatric Dermatology (1986).

2.1 (c)

Noranda Thorold plant gets $7m for recycling

THOROLD — Noranda Forest is investing $7 million in a paper recycling plant, even though its chairman says environmental problems blamed on the forest industry are being blown out of proportion.

"Recycling is a big issue and we want to be there," Adam Zimmerman said yesterday.

Mr. Zimmerman said Noranda, part of the holdings of Peter and Edward Bronfman, is updating equipment at its Thorold plant and turning it into a strictly recycling operation.

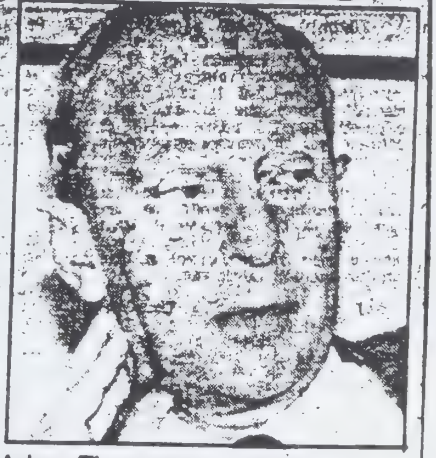
The mill, near St. Catharines, will use post-commercial paper — such as scrap from printing companies, as opposed to used newspapers — to produce a high-grade line of paper products like writing paper.

The plant has been doing some recycling over the last 40 years, but Mr. Zimmerman said the injection of new cash should see the mill doubling its current use of recycled paper to 42,000 tonnes a year.

The expanded operation, which should see production in about three months, will be run under a new division called Noranda Forest Recycled Papers. It should boost sales at the Thorold mill — which Mr. Zimmerman called "marginally profitable" now — to about $135 million a year.

Consumers now accept using paper that is not as bright and white as its bleached counterparts and Mr. Zimmerman said he'll have no problem selling the recycled products to governments, school divisions and many companies.

"I think we're going to get swamped," he said. "I think we'll be able to sell it all."



Adam Zimmerman: big issue

Recycling the paper is anywhere from $100 to $150 a tonne cheaper to manufacture than starting with virgin fibres, he said.

In a Toronto speech yesterday, Mr. Zimmerman also rejected charges that the forest industry isn't replanting enough trees, cutting back on pollutants at its mills or embracing recycling.

The Canadian forest industry is planting 600 million seedlings a year, its record in recycling is better than the average Canadian's, some pollutants released by pulp mills are minute and others occur naturally, he said.

But Gord Perks, a spokesman for Greenpeace, said later Mr. Zimmerman didn't mention that, under current reforestation techniques, only one tree in every three planted lives or that dioxins and furans — toxic chemicals produced by bleach-kraft mills — have only been around since the industrial revolution.

NOV. 21/89

From Canadian Press

2.1 (Rds)

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GREENPEACE

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Fondé au Canada, 1971

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United Kingdom
U.S.A.
World Park Base,
Antarctica/
Base de Recherches,
Antartique

January 5th, 1990

Reginald Whynott
Chairperson
Regional Municipality of Hamilton Wentworth
12th Floor
19 King St. W.
Hamilton, Ontario
L8N 3V9

Dear Mr. Whynott,

Greenpeace urges you to support the adoption of CFC control bylaws presently being discussed by your Environmental Advisory and Engineering Committees.

Municipal participation in programs to recapture CFCs is essential if we are to prevent the continual destruction of the ozone layer which protects us from ultraviolet radiation.

If Greenpeace can help your municipality in the development of CFC bylaws please call on us at anytime.

Thank you for your continuing support for protecting the environment.

Sincerely,

J Bennett

John Bennett
Atmosphere Campaigner

RECEIVED
JAN 16 1990
REGIONAL CLERKS OFFICE

Ozone Depletion

The earth's ozone layer is being destroyed. The depletion of the ozone layer will result in skin cancers, eye damage and crop destruction as increasing amounts of ultraviolet radiation from the sun reach the earth's surface.

Already, British scientists and NASA have identified a hole in the Ozone Layer over Antarctica and a thin area over the Northern Hemisphere. The destruction is caused by chlorine and bromine released into the stratosphere by a group of chemical compounds known as chlorofluorocarbons (CFCs) and halons.

Alarmed by the rapid depletion of the ozone layer more than 40 western nations signed the 1987 Montréal Protocol which calls for a 50% reduction in CFC emissions by 1999.

But will the action announced with great fanfare be enough to save the Ozone Layer?

Greenpeace says NO!

Scientist Joe Farman says NO!

The United States Environmental Protection Agency says NO!

"A 50% cut in world consumption of CFCs will not be enough to save the ozone layer" said Joe Farman in *The New Scientist* November 1987. Farman, a member of the British Antarctic Survey, is credited with identifying the hole in the ozone layer.

In 1988 the EPA said just to maintain stratospheric chlorine at current levels would require a 100% phaseout of CFCs with 100% participation.

There must be an immediate 100% reduction of CFC production.

Smoke & Mirrors

Although Canada signed the Montréal Protocol and recently announced a speed-up of the program, which it says will eliminate 85% of CFC emissions by 1999, the Canadian commitment to elimnating CFCs is suspect.

Canada is only now implementing the cut-backs agreed to in Montréal in 1987. Regulations for the 85% cutback are not expected for another year or more.

What are CFCs used for?

Canada produces 20,000 tonnes of CFC a year or about 2% of the world production. The manufacturers are Dupont in Maitland, Ontario and Allied Signal in Amherstburg, Ontario.

CFC and Halon are generic terms used to describe groups of long-lasting manufactured chemicals that release chlorine and bromine. Used in refrigeration and air conditioning, they are often referred to as "freon", which is actually a Dupont trade name.

The list of their uses includes: refrigeration, foam packaging, air conditioning, cleaning solvents and foam insulation.

ATMoSPHERE

GREENPEACE

Some of these uses are completely unnecessary, such as foam packaging, and for the rest, alternative compounds or technologies are either readily available or are being rapidly developed.

The major source of halon release is from testing fire fighting equipment. Halons are used in extinguishers for fighting fires in computer rooms, libraries, military tanks and other areas where water or other chemicals would increase the damage from a fire. Changing test procedures could prevent most releases, and alternatives are under development.

The Problem

Ozone (O_3) is a pungent bluish gas with the important ability to absorb ultravio-

Hoechst
zerstört die Ozonschicht!
GREENPEACE
Sofortiger Stopp der FCKW-Produktion!
Minister Töpfer, handeln oder gehen Sie!
GREENPEACE

PHOTOGRAPH © [illegible]

Greenpeace Germany begins the recycling of CFCs. Dumptruck loads of abandoned refrigerators were returned to Hoechst -- the German manufacturer of CFCs for refrigerator coolant -- along with Greenpeace demands to stop production and start recycling of the ozone destroying chemical.

2.1(e)

Greenprint for Canada

A Federal Agenda for the Environment

GREENPRINT FOR CANADA COMMITTEE • 111 Sparks Street, 4th floor, Ottawa, Ontario K1P 5B5

Greenprint for Canada

A Federal Agenda for the Environment

Stephen Hazell, *Chair* Philip Jessup, *Executive Director* JUNE 1989

GREENPRINT FOR CANADA COMMITTEE • 111 Sparks Street, 4th floor, Ottawa, Ontario K1P 5B5

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Foreword

GREENPRINT FOR CANADA is a cooperative effort by Canada's environmental, conservation and aboriginal communities. The purpose of the *Greenprint* is twofold. First, it seeks to provide a coherent, realistic environmental agenda for the federal government. Second, it provides a yardstick against which the environmental, conservation and aboriginal communities can judge the government's performance over the next few years.

We would like to acknowledge the following people and organizations for their contributions to the development of the *Greenprint*. Special thanks go to Kenneth Brynaert, Executive Vice President of the Canadian Wildlife Federation, who conceived the project; Stephen Hazell, who chaired the Greenprint Working Committee; Philip Jessup, the principal author of the report; and members of the Greenprint Working Committee, who developed the framework for the *Greenprint* and guided the work on it to completion:

Greenprint Working Committee

Stephen Hazell, Chair, *Canadian Arctic Resources Committee*; Pat Adams, *Probe International*; André Bélisle, *Association québécoise de lutte contre les pluies acides*; François Bregha, *Rawson Academy of Aquatic Science*; Nancy Doubleday, *Inuit Circumpolar Conference*; Arlin Hackman,*World Wildlife Fund Canada*; Barbara Heidenreich, *Canadian Institute for Environmental Law and Policy*; Kevin McNamee, *Canadian Parks and Wilderness Society*; Kai Millyard, *Friends of the Earth*; Dave Monture, *Indigenous Survival International*; Norm Rubin, *Energy Probe*.

The participating organizations wish to express their appreciation to the Canadian Wildlife Federation for its leadership in developing the Greenprint. The Federation initiated the process that led to a consensus within the environmental, conservation and aboriginal communities, and it generously supported the process financially. Since the Greeenprint Working Committee freely developed the contents of the report, the views and recommendations expressed in the report, of course, do not necessarily reflect the views of the Federation.

Finally, the participating organizations would like to thank the Canadian Wildlife Federation staff who helped administer the project. They are: Sheridan Antoniuk, Leslie Beckmann, Sue Belaire, Gary Blundell, Terry Brynaert, Julie Gelfand, Diane Johnston, Luba Mycio-Mommers, Sandy McQuillan, Brian Moffat and Gabriel Racle.

Letter to the Prime Minister

Dear Mr. Prime Minister:

As never before, the environment is a primary concern of voters. During the November 1988 election campaign, Canadians listened carefully to your commitments to a healthy environment and a sustainable economy. They are now looking to your government for action.

Establishing a cabinet committee on the environment and giving the environment minister greater authority within cabinet were important first steps. We also applaud your government's promise to reduce Canada's chlorofluorocarbon use by at least 85 percent by 1999.

But much more needs to be done—and done soon. The recommendations in this report represent a consensus of many environmental, conservation and aboriginal groups representing millions of Canadians. We have identified priorities for federal government action throughout your mandate and have suggested viable means of achieving these goals.

Our recommendations are broad-ranging, to be sure, but we firmly believe they are feasible. Many involve modest changes to policies and regulations. Recognizing that reducing the federal deficit is a priority for your government, we propose ways to fund the more ambitious programs we recommend.

Presenting you with our recommendations is the beginning of a process. We plan to measure your government's progress in achieving environmental conservation over the coming months and years, using these recom-

mendations as a yardstick. During Environment Week in June 1990, we will publish an environmental report card on your government's achievements.

Canadians understand that environmental conservation requires bold action by governments, industry, environmental organizations and individual Canadians working together. For our part, we are keen to work with you and your government in a spirit of cooperation. But it is the federal government that must now assert vigorous leadership and establish a new vision of Canada's ecological security based on a sustainable economy. We trust that our recommendations suggest promising avenues towards realizing that vision.

Assembly of First Nations
Association québécoise de lutte contre les pluies acides
Canadian Arctic Resources Committee
Canadian Coalition on Acid Rain
Canadian Ecology Advocates
Canadian Environmental Law Association
Canadian Institute for Environmental Law and Policy
Canadian Nature Federation
Canadian Parks and Wilderness Society
Canadian Wildlife Federation
Conservation Council of New Brunswick
Ecology Action Centre of Nova Scotia
Energy Probe
Environmental Resource Centre of Alberta
Friends of the Earth
Great Lakes United
Indigenous Survival International
Inuit Circumpolar Conference
Island Nature Trust
National Survival Institute
Pollution Probe
Probe International
Rawson Academy of Aquatic Science
Saskatchewan Environmental Society
Société pour vaincre la pollution
Union québécoise pour la conservation de la nature
West Coast Environmental Law Association
World Wildlife Fund Canada
Consideration pending:
Concerned Citizens of Manitoba
Ecology North
Manitoba Environmentalists, Inc.
Manitoba Naturalists Society
Yukon Conservation Society

Greenprint for Canada: Introduction

Canada at a crossroads

A summer's night, 1988. Blistering heat and smog choked many cities of the northern hemisphere. The hot nights of the warmest year in recorded weather history were not just passing discomfort—they were a f[illegible]tening harbinger of a global warming trend.

Global warming is just one of the warning signs pointing to a planetary environmental crisis:

- The protective ozone layer surrounding the earth has thinned six percent over the northern latitudes, allowing more damaging ultraviolet radiation to reach northern countries like Canada.
- Five oil tanker spills off the coasts of North America, Hawaii and Antarctica in just one year have poured over 50 million litres of crude oil into the sea, killing fish, sea mammals and birds.
- The extinction of plants and animals is occurring at 1,000 times the pace that has prevailed since pre-history.

Warning signs in Canada

In Canada, the warning signs that our ecological security is threatened are just as clear:

- In some parts of Canada, soils have lost 35 to 50 percent of their organic material due to intensive farming. Meanwhile, fertilizer and pesticide sales increased 350 percent since 1966, causing pollution of wells, rivers and lakes.
- Water use across Canada increased 50 percent between 1972 and 1981, even though population increased only about 15 percent. Moreover, public fear about contaminated water has boosted sales of imported bottled water at least 14 fold since 1980.
- Aboriginal and northern peoples are accumulating unsafe levels of toxic chemicals in their bodies because they subsist to a large extent on fish, sea mammals and wildlife that are contaminated.
- 10 percent of Canada's most productive forests—an area almost twice the combined size of Nova Scotia and New Brunswick—has been cut and abandoned. Two thirds of the west coast temperate rainforest have been clearcut by logging operations.
- More than 180 Canadian wildlife species—including the peregrine falcon, whooping crane and eastern cougar—are threatened with extinction as a result of habitat loss and toxic chemical pollution.

Canada reaches a crossroads

If we are to reverse these trends and ensure our survival, we must choose a new path.

We cannot simply react to crises as they arise, like the 1988 oil spill off the British Columbia coast and the PCB fire in Quebec. We cannot continue to handle environmental problems cautiously, typically waiting for other nations—particularly the United States—to act first. We cannot rely exclusively on provincial government for solutions. We must choose another route, one that anticipates problems and attempts to prevent environmental degradation in the first place.

This approach requires fundamental federal policy and regulatory reforms—for instance, enforcement of existing national standards and enactment of robust new standards—as

"Before sustainable development can be applied in Canada, however, we must answer a fundamental question: what as a society are we going to sustain?"

well as basic institutional reforms of the federal government's legal and tax structure. It also demands cooperation with the provinces and respect for provincial jurisdiction over natural resources, without abdicating federal responsibilities.

How did we get here?

The reasons for the environmental crisis are complex.

Our economic system creates many environmental stresses. Government has sovereignty over and responsibility for most natural resources, but allows private companies and individuals to exploit them. This system often relies on "sustainable yield" policies to manage economic uses of trees, fish and other renewable resources.

Resource economists and managers devote much time to calculating sustainable yields, which in theory permit the same level of harvesting to continue indefinitely. In reality, however, these policies have failed to adequately husband our resources.

Indeed, maximizing harvests of resources often makes economic sense under certain conditions. When interest rates are high, the provinces and timber companies have a strong incentive to deplete the resource as quickly as possible. They bank the proceeds to generate quick revenue or use them to reduce deficits. For the forest industry, the trees only provide a return when they are harvested and thus are too valuable to leave standing. That's how many resource managers think today!

Furthermore, the federal government has traditionally favoured tax policies and subsidies that promote maximum exploitation of forests, minerals, fossil fuels and soils. These policies, however, ignore the environmental and social damages borne by society, costs that are not reflected in the price of goods and services. As a result, federal policy not only encourages resource depletion, but also fosters environmental damage.

Finally, population places stresses on the environment, depending on how it is distributed and how a nation's economy produces, uses and disposes of goods and services. While it took over a million years for the earth's population to reach two billion, it now doubles every 45 years.

Canada's population increased 72 percent from 1951 to 1986. This growth has allowed our economy to expand and flourish. But poorly managed economic growth on top of population increases has aggravated the stress on the natural environment.

Sustainable development

The challenge of maintaining economic growth that ensures environmental conservation may be met by "sustainable development," an approach which seeks to integrate conservation goals with development decisionmaking in order to provide employment, encourage social justice and maintain ecological integrity.

Sustainable development was the central theme for the World Commission on Environment and Development chaired by Gro Harlem Brundtland, Prime Minister of Norway and for Canada's National Task Force on Environment and Economy, which sought to adapt the Brundtland Commission's recommendations to the Canadian setting.

Sustainable development offers great hope for sound environmental management. Indeed, were the governments of Canada to adopt and act on the fundamental principles articulated so well by the Brundtland Commission and the National Task Force, many of our environmental problems would be solved. Realizing the benefits of sustainable development, however, requires immediate action by the federal government.

In March 1989, the federal government announced appointments to the National Round Table on the Environment and the Economy, a multisector advisory body. The Round Table will make recommendations to the federal government on the integration of environmental considerations with its economic and social decisionmaking agendas.

Before sustainable development can be applied in Canada, however, we must answer a fundamental question: what as a society are we going to sustain? Canadians must reach a consensus on the underlying purpose, value and necessity of ecological systems and processes, issues we hope the Round Table will address. We must be watchful that sustainable development in Canada does not come to mean sustaining the status quo of economic growth that ignores environmental costs.

contains recommendations developed jointly by environmental, conservation and aboriginal groups of Canada on the reforms the federal government must adopt to achieve sustainable development. Our recommendations are based on the same principles that underlie the Brundtland Commission recommendations. They are, in summary:

- Local communities must always have a say in economic decisions that directly affect their lives. The voices of people most vulnerable to the adverse environmental impacts of resource extraction must especially count.
- Biological and cultural diversity are essential to sustaining a healthy economy and varied ways of life. We must integrate conservation practices into all government decisionmaking and establish a comprehensive network of protected areas to ensure a rich diversity of flora and fauna.
- Federal decisionmaking must be more accountable to the public. Citizens must have the right to ensure that environmental laws are enforced properly, to have access to all government documents that pertain to environmental decisionmaking, and to participate fully in all environmental assessment and standard-setting proceedings.
- Federal economic and environmental policies need to recognize that future generations have a right to share and enjoy the country's natural resources. Policies that squander these resources for the sole benefit of those living today must stop.
- Federal resource policies must maintain the abundance of our resources—forests, soil, water, wildlife and fish. For every tree that government allows industry to cut, for instance, industry must ensure that a new tree grows to maturity within a well-balanced forest ecosystem. Some resources, like old-growth forests, must be regarded as irreplaceable natural assets, not as resources for consumption.
- The federal government must exercise caution when faced with the scientific uncertainties that often characterize environmental assessments. Decisions must err on the side of protection and conservation.

Outline of the Greenprint

Part One of *GREENPRINT FOR CANADA* describes the specific policy and regulatory measures the federal government must adopt to ensure Canada's ecological security. Part Two describes the broader institutional reforms that are needed at the federal level to ensure that sustainable development is enshrined in national policy and decisionmaking.

"Soil degradation occurring across Canada is proof that the present system of agriculture is not sustainable over the long-term....Governments must take much of the responsibility..."

Nurture sustainable farming

Canadian farmers want to maintain the productivity of their soil, and consumers want to be able to eat Canadian farm products without worrying about risks to their health. New farming systems based on sustainable methods promise not only healthier soils, but more wholesome food.

After a particularly dry winter and spring, a strong wind sends clouds of black dust swirling through the streets of Brandon, Manitoba. The dust comes from some of Canada's best soils—the rich organic loams of the Prairies—which become airborne when farmers turn over the parched ground to plant a new crop.

The wind is not to blame for the Prairie's degraded soils, though. Intensive farming practices—continuous row cropping and summer fallowing, for instance—are the real culprits. Soil that has lost its organic matter loses its structure and disintegrates easily. During dry, windy spells, the crumbly soil is carried away causing increasingly frequent dust storms.

Farmers compensate for the loss of organic matter with synthetic fertilizers, and are forced to rely on insecticides, herbicides and fungicides to battle insects, weeds and diseases that flourish in the degraded soils.

The "Soil at Risk" report

Soil degradation occurring across Canada is proof that the present system of agriculture is not sustainable over the long-term.

In June 1984, the Senate's Standing Committee on Agriculture, Fisheries and Forestry travelled across Canada to speak with farmers about their soils. The Committee documented the problem in a report, *Soil At Risk*, which concluded that soil degradation is the most serious environmental problem facing the farmer, costing $1 billion a year in lost income. The Committee concluded that "...we are clearly in danger of squandering the very soil resource on which our agricultural industry depends."

A 1986 Science Council of Canada report, *A Growing Concern: Soil Degradation in Canada*, reinforced the Senate Committee's conclusions. And a 1984 report for the Canadian Environmental Advisory Council estimated that the organic content of prairie soils had declined 36 to 49 percent since they were first used for agricultural purposes. The estimates for Ontario and Quebec are even worse—a 50 percent decline.

Governments must take much of the responsibility for soil degradation. Canada does not have a national soil conservation policy. In Western Canada, the Canadian Wheat Board quotas discourage soil conservation. Production quotas are based on hectares cultivated rather than on hectares seeded in eligible crops. The quota system also promotes the cultivation of marginal lands, some of which, like wetlands, are crucial for wildlife. The quota system of the Canadian Wheat Board must be modified to serve conservation goals.

Further pollution risks

Not only soils are at risk. Water run-off from agricultural lands transports chemicals such as phosphorous fertilizers into rivers and lakes. Too many nutrients upset life in a lake by overfertilizing algae, whose growth consumes available oxygen in the water, kills fish and leads eventually to the destruction of life in the lake. Intensive farming and eroding soils also destroy wildlife habitat—especially wetlands—where waterfowl feed and breed.

Pesticides are a further problem. A 1985 study found that half of 351 wells tested in the southwestern Ontario corn belt were polluted with atrazine, a weed killer used in corn fields, and other pesticides. Consumers, meanwhile, are exposed to a wide variety of insecticide and herbicide residues when they eat food bought at the supermarket. Children are most at risk to cancer, according to a February 1989 study by the Natural Resources Defence Council.

In the past, farmers nourished their soils, as well as their plants. They maintained organic matter in the soil by rotating cereal crops and forage grasses for livestock feed. They recycled composted barnyard manure, and their smaller field sizes reduced overland runoff and erosion.

Nurture sustainable farming

Today, farmers who attempt to manage their farms according to sustainable practices—variously called "organic," "biological," or "regenerative" farming—face difficult barriers. Certain farm credit policies discriminate against farmers who don't maximize production through extensive use of synthetic chemicals.

Furthermore, federal grading practices define the top quality of produce such as Canada #1 and Canada Extra Fancy in terms of appearance. These criteria discriminate against organically grown produce, which typically doesn't look as appealing to the eye as produce sprayed with chemicals to enhance appearance.

Government is doing little

Sustainable approaches may solve the problems of soil degradation and excessive use of pesticides. And yet, the federal government is doing little to encourage these practices.

In 1986 and 1987, for instance, the federal government spent more than $4 billion— $31,000 per farmer—to maintain the incomes of grain producers during a period of hardship, without considering whether these funding programs encouraged sustainable practices.

In order to encourage farmers to explore sustainable farming methods, the federal government's agricultural policies and regulations must be changed in a number of ways.

First, we urge the federal government, in cooperation with organic growers, to develop and implement a national certification program for organic produce in order to speed public understanding and trust of organically grown food.

Second, federal food-grading practices that discriminate against farmers who organically cultivate their crops must be changed. Top quality grades must be redefined so they do not discriminate against produce lacking "perfect" appearance.

Third, we urge the federal government to foster a wide-spread switch to organic farming methods. Presently, farmers interested in these methods feel disadvantaged by the lack of organic farming information available from agriculture representatives, agriculture colleges and research stations. The government can encourage sustainable farming by providing information to farmers. For example, information is needed on crop rotation cycles, organic soil conditioners and organic pesticides, and on homeopathic treatments for livestock. Crop insurance programs also require restructuring to suit the needs of organic farmers.

Fourth, we recommend that the federal government provide technical assistance to farmers during the transition from intensive chemical-based farming to sustainable approaches. This transition poses economic risks to farmers because it it is typically characterized by short-term decreases in yield.

Finally, we recommend that the federal Fertilizers Act and Pest Control Products Act be modified so that commercial organic fertilizers and non-chemical pest controls be favoured with respect to commercial registration.

Recommendations

- ☐ ***Immediately, in cooperation with organic growers:***
  (a) develop a federal system of certifying organic produce;
  (b) modify federal food-grading practices to emphasize criteria such as nutritional value and the absence of pesticide residues, and to de-emphasize cosmetic criteria such as appearance.
- ☐ ***By 1990:***
  (a) adopt a national soil conservation policy;
  (b) require the Canadian Wheat Board to modify the production quota system to serve conservation objectives.
- ☐ ***By 1991, provide technical support to farmers interested in adopting sustainable farming methods and promote restructuring of crop insurance programs to suit the needs of organic farmers.***
- ☐ ***By 1991, amend the federal Fertilizers Act and the Pest Control Products Act so that:***
  (a) commercial natural-source and biological fertilizers receive preferential treatment to synthetic fertilizers for registration;
  (b) non-chemical pest controls are favoured.

"The federal government has largely ignored provisions of the federal Fisheries Act designed to protect fish from pollution and loss of habitat."

Ensure cleaner water and healthier fish

In many parts of Canada, eating fish caught in lakes and rivers that are sources of drinking water is hazardous to human health. Enforcement of water pollution laws and new initiatives to encourage less wasteful use of water will ensure water that is both clean and in adequate supply. In addition, those who rely on fish as a staple, as well as recreational anglers, will be able to enjoy their catch without fear of damaging their health.

Television viewers turned on CBC's *Fifth Estate* on a September evening in 1975 and saw Dr. Masazumi Harada, Japan's leading expert on Minamata Disease, examining an Ojibway fishing guide. The nationwide audience was startled as Dr. Harada discovered the classic symptoms of mercury poisoning—tunnel vision, hearing loss and hand tremors.

After years of complaints to provincial authorities, the Ojibway of Grassy Narrows and Whitedog reserves in northern Ontario now had conclusive proof that local fish were unsafe to eat due to the tonnes of mercury discharged by a nearby pulp mill into the English-Wabigoon river system. The mercury in the water had gradually accumulated in the fish, and built up to even higher levels in the Ojibway, for whom fish were a dietary staple.

A plethora of warnings

Since that discovery of mercury poisoning in 1975, there have been a plethora of scientific warnings about Canada's water and fisheries. A 1984 chemical assessment of Toronto's drinking water, for instance, found dozens of industrial chemicals present in low concentrations, including 30 cancer-causing agents.

A year later, a joint committee of the National Academy of Sciences in the United States and the Royal Society of Canada reviewed the status of Great Lakes water quality and concluded that "...the human population living in the Great Lakes basin is exposed to, and accumulates, appreciably more toxic chemical burden than other human populations in similarly large regions of North America."

As a result of its fish testing program, the Ontario government today warns anglers in its *Guide to Eating Ontario Sport Fish* to restrict consumption of 22 species of fish and eel in Lake Ontario because these species are contaminated with toxic chemicals like PCBs. The increasing incidence of liver and other cancers in fish is a biological warning that water is unsuitable for human consumption.

Despite such studies, the federal government has been reluctant to regulate industrial effluent discharges, and it has made significant budget cutbacks that have nearly crippled national aquatic science research programs.

Enforce the Fisheries Act

Dr. Peter Pearse's 1988 report, *Rising to the Challenge*, described the many threats to Canada's recreational, commercial and aboriginal fisheries. These threats include dam construction, shoreline development and loss of wetlands, not to mention overfishing and municipal industrial pollution.

The federal government has largely ignored provisions of the federal *Fisheries Act* designed to protect fish from pollution and loss of habitat.

During the 1970s, the federal government under the *Fisheries Act* regulated six industries, including oil refineries, pulp and paper mills and metal mines, requiring them to install the best available technologies to reduce contaminants in their effluents.

Since 1980, the federal government has not issued any new regulations, and its enforcement of standards for the six regulated industries has been poor. Despite clear evidence of violations, the federal government has prosecuted few cases.

The *Fisheries Act* offers the best way for the federal government to control industrial water pollution, because ensuring healthy fisheries is

Ensure cleaner water and healthier fish

clearly a federal responsibility under the constitution. Regulations under the *Fisheries Act* can be prepared on an industry-by-industry basis. The federal government can require that effluent of an industry be less toxic to fish, without having scientifically precise knowledge about the individual chemicals present. We urge the federal government to renew its commitment to the *Fisheries Act* by upgrading standards for the six regulated industries and by developing effluent regulations for industrial sectors not now covered.

Enforce fish habitat policy

The fish habitat policy of the federal Department of Fisheries and Oceans seeks to increase the net productive capacity of fish habitat, while allowing no net loss of fish habitats themselves. We urge the federal government to implement this fish habitat policy and periodically evaluate its progress. Moreover, since so much fish habitat has already been destroyed the ultimate goal of the habitat policy must be to provide a net gain in fish habitat, not simply no net loss.

CEPA needs expediting

Although the chemical-by-chemical approach taken by the new *Canadian Environmental Protection Act (CEPA)* is not entirely satisfactory, regulation of the 44 priority chemicals identified by Environment Canada must also be expedited. The federal government must use CEPA to eliminate production and use of classes of deadly chemicals like organochlorines that must never enter our rivers and lakes in any concentration.

Better manage demand

Although Canada is blessed with 20 percent of the world's fresh water, regional water shortages are now a common occurrence. Water use increased 52 percent, from 25 to 38 billion cubic metres, between 1972 and 1981, due to rising demand for water for irrigation, municipal uses and electric power stations.

Plentiful supplies of inexpensive treated water are made possible by government subsidies and policies. The nominal charges consumers now pay for water, however, encourage overuse and waste. As the costs of storing, distributing and treating water increase, the federal government must encourage conservation and realistic pricing of water to manage demand.

One in five Canadians fishes recreationally, and close to one million foreign tourists come to Canada annually to fish, yet governments place no limits on the number of angling licences issued. Moreover, limits on the number of fish an angler can catch may not maintain populations of certain fish species. Conventional fisheries management has responded to the increasing demands of anglers through stocking and fish hatcheries. Improved access to remote lakes and rivers has also increased available supplies. It is time, however, to limit the demand for fish.

Recommendations

- ☐ ***Immediately:***
  (a) enforce and upgrade existing effluent standards for the six industries regulated under the Fisheries Act;
  (b) develop new regulations to control industries not now covered by the Act;
  (c) expedite development of regulations under CEPA for the 44 substances designated by Environment Canada as priority toxic chemicals.
- ☐ ***Immediately:***
  (a) reinstate federal programs that support the training of aquatic scientists;
  (b) upgrade research programs of, and improve coordination among, the three federal aquatic research centres.
- ☐ ***By 1991, develop demand-management policies that:***
  (a) facilitate pricing of water at levels that more closely reflect the costs of managing the resource;
  (b) conserve water.
- ☐ ***By 1991, develop fisheries management programs that:***
  (a) effectively implement the government's "no net loss of fish habitat" policy;
  (b) promote demand management to ensure that fish stocks are sustained.

> ***"The next generation of Canadians may lose their forests unless industry and the provinces, who own 90 percent of Canada's forest lands, harvest forests sustainably."***

The federal government must promote demand management approaches in fisheries to ensure that stocks are sustained. Such approaches include increasing fees, limiting the number of licences allotted for certain species or locations, setting allowable catches more conservatively and enforcing regulations more rigorously.

Restore science leadership

Canada is a world leader in the aquatic sciences, with internationally recognized expertise in hydrological engineering, the treatment of pollutants and limnology. But Canada's leadership is threatened by overly bureaucratic science management and the 1984 federal budget cutbacks for the Water Resources Research Support Program. In an effort to counter this trend, the research programs of the three federal aquatic research centres must have more focus and be better coordinated.

The Science Council of Canada says in its 1988 report, *Water 2020*, that Canadian aquatic sciences are a key to a thriving water industry. We agree, and recommend that the federal government re-establish aquatic science programs, and upgrade research programs by, and improve coordination among, the three federal aquatic research centres.

Foster enduring forests

The world is rapidly losing its forests, and Canada is no exception. Sustainable forestry practices will help to ensure that diverse, ecologically sound forests grow in harvested areas, that forest soils are protected and that irreplaceable old-growth forests are preserved.

Before settlers arrived in Canada, forests were almost everywhere. As waves of migrants moved west, farmers and ranchers cleared the land of trees to provide shelter, fences and fuel. Timber was used to build cities, to make ships and to manufacture paper.

Today Canada's forests still cover 453 million hectares—45 percent of its lands. They contain at least 26 billion tonnes of biomass, second only to the forests of the Soviet Union.

Blessed with this bounty of forests, it is no surprise that Canada's economy and balance of trade depends heavily on the harvesting of trees. According to the Canadian Forest Industries Council, forest products shipments were valued at $36 billion in 1986 and represented more than 14 percent of all manufactured goods.

This bright economic picture, however, obscures a dark side. Past and present forestry management practices have seriously depleted Canada's productive forests.

Report card on Canadian forestry

According to the Auditor General's 1988 report on the federal government's forest management programs, most provinces are now experiencing significant shortages of wood. And despite the expenditure of over $1 billion by federal and provincial governments on forest management, including reforestation, the restocking of productive forest lands hasn't kept up with consumption. Forestry Canada has classified 22 million hectares, 10 percent of Canada's total productive land, "Not Sufficiently Restocked (NSR)," land that may not again produce mature trees due to present forestry practices.

Canada is rapidly losing its old-growth forests. All of Atlantic Canada's native hardwood forests, 90 percent of the Carolinian hardwood forests of southwestern Ontario and the merchantable old-growth forests in British Columbia are nearly gone. The Carmanah Valley on Vancouver Island is particularly threatened. The Valley shelters irreplaceable natural assets—500-year-old Sitka spruce taller than the Peace Tower.

The next generation of Canadians may lose their forests unless industry and the provinces, who own 90 percent of Canada's forest lands, harvest forests sustainably. Our forests have been consistently undervalued. Industry pays little for the trees it cuts down and plants only one tree for every four it harvests.

Foster enduring forests

Forest product workers are worried. Says the Canadian Paperworkers Union: "The connection between growing resource scarcity and the threat to industrial payrolls is only too obvious. Neglect of the forest leads to unemployment, social decay and dislocation with all the attendant costs."

Tropical deforestation

The threatened status of Canadian forests mirrors an even darker global trend—depletion of the world's tropical rainforests. They are under assault from logging and mining industries, ranchers, hydroelectric dam builders and government resettlement schemes.

As in Canada, continuing deforestation in tropical countries hurts not only jobs and local economies, but also hundreds of millions of rural inhabitants who rely on the forest for food and fuelwood. In tropical countries, aboriginal communities are literally being wiped out by development projects.

Forests are also repositories for a large variety of plants and animals. Scientists estimate, for example, that tropical forests may harbour 50 to 80 percent of all the world's species, including plants, animals and microorganisms that provide chemical stock for over 40 percent of North America's medicinal drugs. Yet it is estimated only five percent of tropical rainforest species have been identified.

Perhaps most important, the earth's forests play a vital role in regulating the global climate. Forests grow by absorbing carbon dioxide from the atmosphere. Forest respiration thus helps regulate the amount of carbon dioxide in the atmosphere. With man-made carbon emissions threatening to lead to an increase in the average global temperature, the forests' carbon absorption and storage ability is more important than ever.

Federal policies contribute to unsustainable forestry practices at home and abroad. Several of the federal-provincial forestry agreements subsidize the building of logging roads. In addition, these agreements encourage monoculture and widespread use of herbicides—practices that create plantations, not forests.

Our foreign policies do much the same abroad. Our voting record in multilateral development agencies like the International Bank for Reconstruction and Development (World Bank) and projects funded by the Canadian International Development Agency (CIDA) have supported megaprojects that destroy tropical forests in developing countries.

Promote sustainable forestry

The government is presently drafting legislation to give Forestry Canada, a new department formed from the old Canadian Forestry Service, a mandate. The top priority of this new mandate should be conservation of Canada's forests, with special attention to preserving old-growth forests and increasing scientific research on forest ecology and wildlife management.

In keeping with this new mandate, the federal government should then proceed to renegotiate its forestry agreements with the provinces to

Recommendations

☐ ***Immediately take steps to ensure that Canada's foreign aid programs promote sustainable forestry and protection of tropical rainforests in developing countries.***

☐ ***By 1990, enact legislation that gives Forestry Canada a strong conservation mandate and responsibility to increase scientific research on forest ecology and wildlife management.***

☐ ***By 1991, renegotiate the federal-provincial forestry agreements to promote sustainable forestry management that:***
a) encourages forestry practices such as careful logging road construction and selective cutting that foster regeneration of diverse, ecologically sound forests;
(b) broadens integrated economic and recreational uses of the forests;
(c) encourages the provinces to protect Canada's old-growth forests.

☐ ***By 2000, replant two million hectares of land for a wide variety of economic and social purposes, to be funded by a national carbon tax.***

The loss of biological diversity in Canada is a national tragedy."

encourage selective logging, narrow-strip clear cutting or other methods that allow for forest lands to regenerate naturally into diverse ecologically sound forests.

The agreements must also encourage use of forest resources and lands for a wider range of activities, such as tourism and wildlife habitat, that can benefit local communities economically. Furthermore, the agreements must encourage provinces to develop conservation plans for their old-growth forests, with British Columbia's Carmanah and Stein Valleys, together with Ontario's Temagami wilderness, receiving top priority.

Second, we urge the federal government to double the present pace of reforestation in Canada, towards a goal of replanting two million hectares by the year 2000. This program will cost about $300-500 million per year and would be funded by a national carbon tax (see page 26). The program should encourage reforestation that promotes tree planting for a wide variety of economic and social purposes, from beautification of Canadian cities and towns to biomass energy projects.

Finally, Canada must review its foreign aid policies and programs to ensure that they do not contribute to further destruction of tropical forests. At multilateral aid agencies like the World Bank, Canada must vote against projects that lead to tropical deforestation. CIDA's programs must encourage conservation of rainforests and sustainable reforestation projects. In addition, Canada should consider bilateral debt forgiveness strategies to enable debtor nations to conserve their forests. Such strategies must be developed in consultation with local populations.

Conserve wildlands and wildlife

The diversity and abundance of Canada's wildlife must be protected by completing the national parks system, developing endangered species legislation and recovery programs, and enforcing international wildlife treaties.

Year after year the traders of Red River, Manitoba, accompanied by Métis guides, forayed across the prairie rangelands to kill the buffalo. Hides destined for lucrative buffalo leather markets were their target. But in 1883, the wagons came back empty. The once colossal herds of plains bison had vanished.

The massive extermination of plains bison from the Canadian Prairies over just 40 years had a domino effect on other Prairie wildlife. Predators like wolves who depended upon the bison for food disappeared. Market hunters then ventured further north to slaughter the herds of wood bison, a sub-species unique to Canada, which ranged over the northern regions of Saskatchewan, Alberta and British Columbia. By 1891, only 300 wood bison remained.

By 1922, the wood bison population had recovered to 1,500-2,000, and the federal government established Wood Buffalo National Park to protect the herd in its natural habitat. Then the federal government made a grave mistake. It brought 6,000 plains bison into the park, leading to such interbreeding that scientists pronounced the wood bison extinct.

Lessons of the wood bison

Miraculously, in 1958 scientists discovered a small herd of pure wood bison in a corner of the park. The herd was then moved to an area northwest of Great Slave Lake in the Northwest Territories and to Elk Island National Park in Alberta, where the herds now total about 2,500 members. In 1988, Canada "downlisted" the wood bison to a "threatened" species.

The wood bison's flirtation with extinction offers two lessons.

First, wildlife and their wildland habitats are inseparable, and both need protection. Wood Buffalo National Park has provided much-needed habitat for the wood bison. But the herds of plains bison will never return because their habitat—the prairie grasslands—is now farms, oil fields and cattle ranches.

Second, scientists' knowledge of wildland ecosystems is limited, so when we tamper with these ecosystems, unpredictable consequences for wildlife may follow. In recent times, for instance, nine species of wildlife in Canada—including the Dawson woodland caribou, the Labrador duck,

Conserve wildlands and wildlife

the sea-mink and the passenger pigeon—have become extinct.

Loss of biological diversity

The loss of biological diversity in Canada is a national tragedy. All of the native Atlantic hardwood forests are gone, along with about 90 percent of the Carolinian hardwood forests found in southwest Ontario, and two-thirds of the west coast's temperate rainforest. More than 80 percent of the native prairie grasslands has been converted to agricultural and other uses, and less than one percent of the historic tall-grass prairie remains.

In order to stop this devastating loss, we urge action on two fronts. First, the federal government must increase the number of protected areas in Canada. Second, it must enhance both the diversity of wildland habitats and the species that inhabit them.

Protected areas under federal responsibility include national parks, migratory bird sanctuaries and national wildlife areas. When complete, the national parks system will protect areas representative of all Canada's ecological regions. The system now stands half complete. Only 21 of Canada's 39 terrestrial natural areas are protected, as are only two of the 29 marine natural areas.

Unfortunately, there is no strategic plan to complete the system. Such a plan would offer a blueprint with specific geographic boundaries for new parks and analyse the financial, legal and administrative actions needed to establish the parks.

With Canadian wildlands vanishing fast, the federal government must continue the laudable effort it started last term, when it established six new parks. Completion by the year 2000 is critical. As the federal government's Task Force on Park Establishment said in 1986: "Future land use options are being foreclosed on a massive scale in this generation. By the year 2000 the possibility of dedicating wilderness lands to conservation will have all but vanished."

Conserving endangered species

Canada also needs new legislation to more adequately conserve wildlife and to protect endangered species. At least 180 species of mammals, birds, reptiles, fish and plants native to Canada are threatened with extinction, according to the Committee on the Status of Endangered Wildlife in Canada (COSEWIC). We urge Parliament to enact an Endangered Species Act, so that Canada can ensure that no federal funds are spent on projects that diminish the biological diversity of its natural ecosystems.

The federal government is presently working to restore populations of high-profile endangered species such as the whooping crane and peregrine falcon. The government also provides leadership on endangered species through the "Recovery of Nationally Endangered Wildlife" (RENEW) program. Unfortunately, the program has published recovery plans for only three of the species now at risk in Canada. This is unacceptable. We urge the federal government to develop and to adopt recovery plans and programs for the most threatened species by 1993.

Recommendations

- ☐ ***Immediately restore personnel to enforce the Migratory Birds Convention Act (MBC) while allowing the aboriginal spring hunting to continue until Canada and the U.S. amend the Convention to sanction the traditional hunt, and take steps to properly enforce the Convention on International Trade in Endangered Species.***
- ☐ ***By 1991, formulate a strategic plan to complete the national terrestrial park system and 50 percent of the marine park system by the year 2000, providing evaluations of the plan's implementation in Environment Canada's biennial report on the status of the national parks.***
- ☐ ***By 1992, enact a federal Endangered Species Act that ensures federal funds are spent in ways that enhance Canada's biological diversity.***
- ☐ ***By 1993, establish recovery plans for endangered, threatened and extirpated species as listed by the Committee on the Status of Endangered Wildlife in Canada.***

Wildlife treaties need enforcing

The federal government must also increase enforcement of legislation implementing two wildlife protection

> ***"...the North is not just the last frontier for megaprojects to satisfy the desires of North American consumers. The North is also the homeland of the Dene, Métis and Inuit peoples."***

treaties—the Migratory Birds Convention (MBC) and the Convention on International Trade in Endangered Species (CITES).

The Royal Canadian Mounted Police enforces the MBC in cooperation with the Canadian Wildlife Service and provincial wildlife authorities. In 1988, enforcement officers were transferred to other duties without any consultation with the Service. At a minimum, the federal government should allocate enough resources to the Service to return MBC enforcement to former levels.

Importance of spring hunt

Meanwhile, the policy of exempting aboriginal spring hunting in the North from the MBC should continue. Furthermore, the federal government should resume negotiations with the United States to modify the MBC to sanction the traditional spring hunt by aboriginal peoples, with provisions to ensure adequate conservation. This hunt provides a much-needed protein diet for aboriginal people after the long winter, without threatening waterfowl populations.

The federal government does not adequately enforce CITES, which was designed to prevent international trade in endangered species. Our credibility in the international conservation community is at stake. A program to properly train Canadian Wildlife Service and customs personnel in the identification of endangered or threatened wildlife species listed under CITES is essential.

Protect Canada's unique North

The unique aboriginal cultures and ecosystems of the North are threatened by unsustainable resource extraction and pollution. The federal government must work cooperatively with territorial governments and aboriginal communities to ensure that development of the North is closely monitored, environmentally sound and permits aboriginal people to continue to live their traditional lifestyle.

The Klondike River has a short, turbulent life, flowing west 150 kilometres from its head waters to the Yukon River, which it joins near Dawson. Its creeks once teemed with gold seekers, swelling Dawson during the height of the gold rush with more people than live in all of the Yukon Territory today.

All that's left of Dawson now is a muddy frontier tourist town and Robert Service's poems to remind us that Canada's North—the Territories and parts of Quebec and Labrador that lie north of latitude 60°—is "Steeped in eternal beauty, crystalline waters and woods....Monstrous, cheerless, pathetic, the last of the lands and the first."

Today oil and gas engineers and lead, zinc and uranium miners have joined a new generation of gold miners. They, too, are determined to extract resources from the North's frontier lands, despite extremes in climate that can challenge the most advanced technologies, a dearth of roads and boom and bust cycles in world commodity markets. Often substantial government subsidies are required to make such projects work.

Northern homelands

As Justice Thomas Berger's Mackenzie Valley Pipeline Inquiry made clear over a decade ago, however, the North is not just the last frontier for megaprojects to satisfy the desires of North American consumers. The North is also the homeland of the Dene, Métis and Inuit peoples. They see the land differently.

For the North's aboriginal peoples, living on the land and water means survival and an unique way of life. Indeed, they need vast expanses of territory to survive because the low biological productivity of northern ecosystems makes food scarce. Caribou, fish and marine mammals are staples of the Inuit diet, "country" food high in iron and other nutrients that enable them to survive the cold.

The North is special in another way. Terrestrial and marine ecosystems have evolved to allow life to function in continuous winter darkness by storing energy or gathering it

Protect Canada's unique North

over wide areas. Plants and animals, therefore, survive on a metabolic fine line. They often don't have enough reserves of energy—nor do they exist in large enough numbers—to cope with disturbances. When conditions do permit an uncommonly productive local habitat, its tolerance for change is low.

These low-energy ecosystems, which have successfully adapted to dark, cold and ice, have difficulty adjusting to outside perturbations and make the North especially vulnerable to environmental contamination. The low-energy milieu retards decomposition of industrial contaminants, for instance, and plants and animals recover slowly from damage inflicted on them.

Vulnerability to pollution

Unfortunately, the North's fragile environment is threatened by pollution from many sources. The Arctic is a sink for industrial pollutants from around the world because atmospheric and ocean circulation carry a load of chemicals there. Arctic haze—smog carried by air currents from Europe, the Soviet Union and North America—is a serious problem, for example.

This contamination affects both people and wildlife. Many species of birds indigenous to the coasts of North America migrate to the Arctic to breed. Furthermore, the Arctic Ocean supports plankton communities that attract many migrating whales. Damage to these fragile habitats would have profound repercussions on wildlife outside the Arctic.

There are three primary environmental threats to the North: megaprojects that extract and transport minerals and fossil fuels; military construction and operations; and toxic pollution that is borne to the Arctic from other parts of the world by air and ocean currents.

Resource extraction

Resource extraction poses special environmental risks for the fragile terrestrial and marine ecosystems of the North, as the ecological disaster wrought by the Valdez oil spill in Prince William Sound of Alaska has shown.

The federal government must avoid subsidizing the development of non-renewable resources in the North. The federal government must also ensure that the on and off-site environmental impacts of resource development projects are carefully examined before permits and licences are issued. Furthermore, northern aboriginal peoples must have a strong say in the evaluation and eventual licensing of such projects, and their right to sustainable use of their resources must have high priority.

Uranium mine unwanted

The proposed Kiggavik uranium mine near Baker Lake in the Northwest Territories is a good example. The Inuit Circumpolar Conference opposes the exploration and mining of uranium in general and the Kiggavik mine in particular. The Inuit fear that the "tailing" wastes from the mine will contaminate their communities, which lie downwind and downstream. Quite apart from the uncertainties posed by the project—no one has ever sunk an open pit uranium mine into continuous permafrost—the public review panel established under EARP will ignore the fundamental issue of uranium mining development through the entire region.

Recommendations

- ☐ ***Immediately reject the licence application for the proposed Kiggavik uranium mine in the Northwest Territories.***
- ☐ ***By 1990, subject military construction projects and their subsequent operations, including the North Warning System, to rigorous environmental assessment.***
- ☐ ***By 1991, initiate negotiation for a circumpolar Arctic Treaty that aims to reduce the fallout of airborne toxic chemicals on Arctic terrestrial and marine ecosystems.***

Military activities

Military construction and operations raise another concern. In 1985, Prime Minister Brian Mulroney and former United States President Ronald Reagan formally agreed to construct, at a cost of nearly $1 billion, the North Warning System, which includes the construction of a number

"Although Canadians are not a large factor in worldwide carbon emissions, we do produce more carbon per capita—about five tonnes per year—than most other countries."

of of new radar stations and new bases for jet fighters, as well as the upgrading of several existing military installations. The shoddy dismantling of the 1950's DEW line—drums of PCBs and other wastes were in some cases put onto sea ice and left to drift and eventually sink into the Arctic Ocean—raises concern about the new military effort, especially since some sites are near many Inuit communities.

We urge the federal government, through appropriate environmental assessments, to ensure that construction of these facilities, as well as any accompanying military operations, do not damage the environment, and thereby do not pose a threat to local native communities.

Circumpolar treaty needed

Finally, Canada should negotiate an Arctic treaty with other circumpolar nations to curb industrial emissions that threaten the region. Some of the provisions of the Antarctic Treaty—particularly relating to scientific cooperation and monitoring—may serve as precedents for an Arctic agreement. Soviet President Mikhail Gorbachev's speech in October 1987 in Murmansk laid the initial groundwork for an Arctic zone of "peace and fruitful cooperation." Finland has since offered to host a circumpolar conference on the environment in the next two years. Canada should offer to co-host the Finnish meeting and should begin now to initiate negotiations for a circumpolar environmental treaty.

Safeguard the global commons

Our atmosphere and oceans, which are linked in complex ways that shape the earth's climate and life-support systems, are threatened by global pollution. Canada must work towards global ecological stability by promoting new international institutional arrangements to reduce ocean and air pollution, while reducing air and ocean pollution at home.

Photosynthesis converts sunlight into chemical energy that powers the earth's life support systems. Although scientists don't yet fully understand it, we learn the basics as school children.

Plants, from giant Sitka spruce to the ocean's enormous plankton communities, absorb the sun's radiation and carbon dioxide from the air or carbonate from water. They then produce carbon-based organic compounds, the Lego® of plant material, giving off oxygen as a waste product. As the plants die and decay, some of the carbon returns to the air as carbon dioxide or to the water as carbonate. The rest gets buried in the earth's soil or in the ocean's sediments.

The warming planet

The atmosphere and oceans are linked in complex ways that shape the global carbon cycle, and with it the earth's climate and life support systems. Man has profoundly altered this cycle in recent centuries, with potentially profound consequences for life on earth, by deforesting large regions of the earth and burning increasing amounts of carbonaceous fuels to produce energy. Today human activities are responsible for the release into the atmosphere of 4.5 to 5.5 billion tonnes of carbon each year.

The concentration of carbon dioxide in the air has risen 25 percent since the middle of the 19th century. While the sun's rays can pass through this additional atmospheric carbon dioxide unimpeded to warm the earth, the same carbon dioxide prevents the dissipation of heat from the earth into outer space. This phenomenon threatens to warm up the planet faster than at any time in the last million years.

If the trend continues, the greatest temperature rises will occur in northern countries like Canada, especially during the winter. Snow and ice cover will diminish, thereby changing the colour of land and water masses from white, which reflects the sun's rays, to darker hues that absorb the sun's rays and produce more heat.

Problem of the global commons

The atmosphere and oceans are a part of the "global commons," areas of the planet that fall outside of national jurisdiction. As the global

Safeguard the global commons

warming threat shows, however, individual nations can profoundly influence these areas, in turn affecting the ecological and economic security of other nations.

Canada has been a diplomatic leader in developing international awareness of and solutions to problems that affect the global commons. It played a key role in the negotiation of the United Nations Convention on the Law of the Sea in the 1970s and the Montreal Protocol on chlorofluorocarbons (CFCs) in 1987. Recently, Canada became one of the first nations to go beyond the 50 percent cut in CFCs called for by the Protocol, proposing regulations to reduce our production and consumption by at least 85 percent by 1999.

Canada also hosted *The Global Conference on the Changing Atmosphere* in Toronto in June 1988. Scientists at the conference called for a 20 percent reduction in the world's carbon emissions by 2005 as an initial step towards the longer-term goal of a 50 percent reduction, which they deemed necessary to stabilize the global warming trend.

Recommendations

☐ ***Immediately:***
(a) ratify the United Nations Convention on the Law of the Sea;
(b) take steps to ensure strong enforcement of the ocean dumping provisions of the Canadian Environmental Protection Act (CEPA);
(b) incorporate conservation provisions into the proposed Oceans Act, including a provision for protecting ecologically significant marine areas.

☐ ***By 1990, make a commitment to reduce carbon emissions in Canada by 20 percent from 1988 levels, to be achieved by 2005.***

☐ ***By 1991, in order to fulfill the national carbon reduction commitment, establish a national energy conservation program that:***
(a) strengthens federal automobile and light-duty truck fuel economy standards by aiming for a corporate average fleet economy (CAFE) of 4.7 litres per 100 kilometres by the year 2000;
(b) enacts new federal appliance, lighting and electric motor efficiency standards equivalent at least to current American federal standards;
(c) incorporates minimum efficiency performance criteria based on the R2000 housing program into the National Building Code;
(d) promotes provincial and municipal programs that contribute to more efficient use of energy, such as expansion of urban transit and inter-city rail systems.

☐ ***By 1991, introduce a national carbon tax on fossil fuels to raise up to $40 billion over 15 years to fund the national energy conservation program, to reforest two million hectares and to complete the national park system.***

Actions needed on the oceans

Oil spills, toxic chemical pollution and plastic debris are choking the life of our oceans. Countless seabirds, sea otters and unseen wildlife beneath the waves were killed by the Exxon Valdez oil spill in Alaska. Endangered beluga whales living in the Gulf of St. Lawrence and St. Lawrence River are now 10 to 100 times more contaminated than any marine mammal studied, due to industrial pollution of the river. Plastic debris is the scourge of the high seas—an estimated 639,000 plastic containers were dumped into the world's oceans per day from merchant marine vessels in 1979.

The federal government must now take action to reduce Canada's pollution of the oceans. It is shameful, for example, that Canada has not ratified the Law of the Sea Convention, which would set up an international regime for managing ocean transportation, resource development and pollution.

Canada hasn't ratified the Convention, which it played an active role in negotiating in the 1970s, due to pressure from international mining companies, who oppose certain deep seabed mining provisions. Present Canadian advocacy of an international convention on the atmosphere is undermined, by Canada's failure to ratify the Law of the Sea Convention.

Canada can do much to prevent ocean pollution within its own international 200-mile limit. The two recent disastrous oil spills off the coasts of British Columbia and Alaska illustrate the need for stronger federal leadership to control ocean dumping and to deal with pollution in coastal waters.

The federal government, as the result of a 1988 Supreme Court ruling, now has unequivocal jurisdiction over discharge of contaminants into coastal waters. We urge, therefore, that the government immediately begin strongly enforcing the ocean dumping provisions of the Canadian Environmental Protection Act (CEPA). In addition, we recommend that the federal government incorporate conservation provisions into the proposed Oceans Act, including a provision for protecting ecologically significant marine areas.

20 percent carbon reduction

Although Canadians are not a large factor in worldwide carbon emissions, we do produce more carbon *per capita*—about five tonnes per year—than most other countries.

Canadians produce a lot of carbon because Canada's economy is the most energy intensive in the world, using the most energy to produce a dollar's worth of goods and services. We urge Canada to be the first nation to make a commitment to the 20 percent carbon dioxide reduction target set by the 1988 Toronto conference. We recommend a new national energy conservation program to reduce Canada's energy use and, along with it, carbon emissions.

Such a program must involve: (a) tougher efficiency standards for automobiles and light-duty trucks to achieve average corporate fleet economies (CAFE) of 4.7 litres per 100 kilometres by the year 2000; (b) new regulations promulgating national efficiency standards for appliances, lighting and electric motors equivalent to those now or about to be legislated by the United States; (c) incorporation of the minimum efficiency performance criteria for new R2000 residences in the National Building Code; and (d) new agreements with the provinces to encourage provincial and municipal energy conservation programs, such as expansion of urban and inter-city mass transit that shifts commuters from inefficient autos to more efficient van pools, buses, subways and light rail systems.

National Canadian efficiency standards would ensure a growing domestic market for Canadian energy-efficiency technology, while creating new research and development opportunities, as well as jobs, in Canada. Furthermore, a significant reduction in Canada's energy use over the next 15 years will make Canada more energy secure and more competitive in world markets.

A national carbon tax

Finally, we urge the federal government to introduce a national carbon tax on all uses of fossil fuels, including fuels used in transport, industry, electricity generation and homeheating (see page 26). The tax would raise up to $40 billion over 15 years, which should be used to undertake the national energy conservation program; reforest two million hectares for a variety of economic and social purposes (see page 14) while expanding Canada's forest carbon reservoir; and to provide funds for completion of our national park system (see page 15). In addition, the tax will encourage a shift to natural gas, the fossil fuel that releases when it burns the least amount of carbon dioxide into the atmosphere.

Basic Institutional Reforms

As the last decade of this century approaches, Canada faces important challenges that call for fundamental institutional reforms to ensure that our economic and legal systems adequately protect the nation's ecological security. We recommend the following measures, which represent our vision of sustainable development in Canada:

Enact an environmental bill of rights

Entitlement to a healthy environment will add needed legal checks and balances that help citizens protect the public interest in a healthy environment.

Canada's legal system dissuades citizens from bringing law suits in the public interest against polluters to make them accountable for the damages they cause. Under the common law, Canadian courts are reluctant to give citizens access or standing to sue unless property or business interests have been damaged.

Should individuals or environmental groups be fortunate enough to gain standing, the legal rules of causation put the burden of proof on them to demonstrate a causal link between polluters' waste discharges or emissions and the harm done—usually a daunting task. Furthermore, if they lose the case, they may have to pay the polluters' legal costs. It is no wonder many victims of environmental contamination suffer in silence.

Governments also typically develop environmental regulations with little public input. Although some federal and provincial departments are opening up the standard-setting process to the public, the practice remains extremely uneven from one department to another. Environment Canada's policy on public participation in regulation-setting represents an important advance. Federal-provincial consultations on natural resource and energy matters, on the other hand, remain largely secretive.

For many years, environmental advocates have called for provincial and federal legislation to guarantee citizens the right to use the courts and to participate in government standard-setting efforts to protect the environment. It is a good idea whose time has come.

Ontario is seriously considering an Environmental Bill of Rights. The federal government should do the same. Such a law would ensure every Canadian the right to a healthy

Recommendations

- ☐ ***By 1991, enact an Environmental Bill of Rights that entitles Canadians to a healthy environment to the full extent of federal jurisdiction and guarantees them:***
  (a) the right to use the courts to ensure that federal environmental laws are properly obeyed and enforced;
  (b) the right to participate fully in the federal government's environmental decisionmaking.

> ***"Environmental accountability must be accorded as high a priority as financial accountability within government."***

environment to the limits of federal jurisdiction. The federal government would have a duty to ensure a healthy environment and to conserve natural resources under federal control for the benefit of present and future generations.

The Bill of Rights would entitle the public to use the courts to ensure that federal environmental laws are obeyed and enforced and provide the right to participate more fully in government decisionmaking.

Legislate the environmental assessment process

An independent federal environmental assessment process will lead to more informed government decisions about economic development projects that occur within areas of federal responsibility.

The federal Environmental Assessment and Review Process (EARP) badly needs reform. Established in 1974 and formally instituted by Order-in- Council in 1984, EARP screens the environmental implications of proposals that come under federal jurisdiction. Such proposals include projects receiving federal assistance or located on federal lands. When proposals are considered likely to have significant adverse environmental impacts, they are referred to the Minister of the Environment for a public hearing.

While federal departments have not used EARP consistently, a recent court ruling has determined that EARP is legally binding. In April 1989, the Federal Court of Canada ruled that the proposed Rafferty dam on the Souris River in southern Saskatchewan must be subjected to EARP. The court challenge by the Canadian Wildlife Federation followed the refusal of the federal environment minister to order a federal environmental assessment, even though a federal licence was required—and issued—for its construction.

Even when used, however, EARP has many shortcomings. Concerned citizens may participate in public hearings, but not in the earlier stages of an environmental assessment. As a result, development proposals not referred to public hearings usually escape public scrutiny altogether.

Moreover, funding to assist concerned citizens and organizations prepare for hearings is seldom available, making it difficult for these groups to carefully study the proposal. And concerned citizens have no right to see documents other than those presented at the public hearings, to present evidence, or to cross-examine proponents' witnesses at public hearings.

Often the panels conducting the public hearings are not even permitted to recommend rejection of a project, only to suggest terms and conditions under which the project will go forward. The federal government apparently recognizes the weaknesses of EARP and has promised new legislation.

Recommendations

☐ ***By 1990, legislate the environmental assessment process to ensure that:***
(a) all policies, programs and projects, including military ones, that fall within federal jurisdiction receive rigorous environmental assessments;
(c) citizens are guaranteed the right to participate fully in all stages of the federal government's environmental assessment process;
(d) an independent Environmental Auditor General is appointed to oversee compliance of federal activities with environmental statutes and regulations.

Federal policies, programs and projects must all be subjected to rigorous environmental audits. Environmental accountability must be accorded as high a priority as financial accountability within government. The federal government recently took a positive step by establishing a cabinet committee on the environment chaired by the Minister of the Environment.

We propose the appointment of an Environmental Auditor General, somewhat analogous to the Auditor General of Canada. The Environmental Auditor General would report directly to Parliament and would be empowered to periodically review compliance by federal departments and agencies with environmental assessments, laws and policies.

In sum, we recommend that Parliament enact legislation by 1990 that requires the application of environmental assessment processes by all federal departments and agencies to all federal policies, programs and projects; guarantees the right of public participation at all stages of the process and provides a fund to assist such participation; and establishes an independent Environmental Auditor General to keep watch over federal compliance with environmental assessments, laws and policies.

Assert stronger federal leadership

Clarification of federal responsibilities will strengthen the role of the federal government in environmental conservation.

Canada's constitution doesn't mention the environment. As a result, the respective roles of the federal and provincial governments in environmental protection and conservation have become increasingly confused over the years. The reluctance of the federal government to stand up for the national interest for fear of offending the provinces has created even greater confusion.

Acid rain is a good example. The federal government had authority under the former federal Clean Air Act to regulate sulphur emissions from smelters and power plants. It opted for a cooperative effort with the provinces, enticing them with subsidies to lure them into establishing their own regulatory programs.

Canada's national acid rain control program, consequently, took many years to get off the ground, and what it will eventually achieve still remains uncertain. Ontario and Quebec have embarked on control programs, but other eastern provinces have been slow to follow. Indeed, some are now planning new coal-fired plants to export electricity to the United States, and it is uncertain whether the plants will have proper controls on sulphur dioxide emissions!

Federal-provincial jurisdiction over fisheries is an especially confusing area. Although the constitution grants the federal government clear responsibility for the management of Canada's marine and freshwater fisheries, the provinces own most of the land and inland waters, thereby creating shared responsibilities.

The federal government must take clear responsibility for protecting fish habitat from pollution, while the provinces remain responsible for managing the demand and supply of freshwater fish, aside from ocean-going species like salmon.

Federal and provincial governments have tried to clarify their respective responsibilities for environmental protection through informal agreements, with most of the provinces taking on the job of enforcing national standards. Unfortunately, the provinces do not always do this, and the agreements provide no accountability mechanism. One study done for Environment Canada in 1985 concluded that this delegation to the provinces was "...having negative effects on the implementation of Environment Canada's mandate." Delegation of responsibility is causing Environment Canada to lose its ability to enforce its own laws.

Recommendations

☐ ***By 1990, take steps to provide a solid foundation for federal leadership by clarifying federal responsibilities for environmental conservation and pollution, starting with fisheries management and control of pollution that affects fisheries.***

The existing agreements with the provinces must be replaced by clear contracts for provincial enforcement services, with an annual progress report required, so there is provincial accountability for meeting national environmental goals. This approach should be used for federal-provincial agreements under the new Canadian

"Subsidies not only accelerate resource depletion, but harm the environment."

Environmental Protection Act.

Ultimately, the federal government must retain at least some residual capacity to enforce its own laws, since other governments will never have the same allegiance to federal requirements.

Eliminate harmful resource subsidies

Elimination of subsidies promoting resource extraction will foster sustainable use of renewable resources and more prudent use of non-renewable resources, as well as minimize the environmental damage that often accompanies current subsidies.

Federal subsidies to the mining, energy, forest and agricultural sectors carry high environmental risks and often have adverse effects.

Subsidies often encourage depletion of renewable resources and extraction of non-renewable resources like oil, gas and minerals in regions of the country, like the North, that are extremely vulnerable to environmental degradation.

Recent federal commitments of several billion dollars to the Hibernia oil field development off the coast of Newfoundland, and to the Lloydminster Upgrader and the Other Six Leases Operation (OSLO) tar sands project in Alberta, are striking examples. These projects will do considerable environmental damage. The Hibernia and OSLO projects during their first phases, for instance, will produce, or result in the production of, carbon dioxide emissions amounting to 240 percent of Canada's total carbon dioxide emissions in 1985!

Commercial viability of these projects depends on the price for world petroleum rising to a significantly higher level than the 1988 price. A domestic energy market without these subsidies would make Canada more energy secure, because fossil fuels would stay in the ground, where they remain available for future use until the laws of supply and demand make their exploration and development commercially feasible.

Subsidies not only accelerate resource depletion, but harm the environment. Ongoing subsidy programs that have lofty goals—crop insurance for the farmer or federal-provincial forestry agreements that provide funds for reforestation, for instance—are administered or financed in ways that inadvertently encourage poor resource stewardship.

We urge the federal government to renegotiate subsidies to the Hibernia, Lloydminster Upgrader and OSLO projects, with the aim of winding down and cancelling the subsidies. We realize that we are asking government to retroactively cancel commitments it previously made to certain industries. However, the folly and expense of going ahead with the projects, in light of the federal budget deficit and the environmental harm these projects may cause, is too compelling to ignore.

We also urge that the Cabinet's new environment committee commence a review of ongoing subsidy programs and upcoming projects, such as several planned nuclear power plants, to ensure that they do not damage the environment or encourage the depletion of resources. This review should also identify ways that federal incentives can benefit the environment while meeting economic

Recommendations

- ☐ ***Immediately renegotiate megaproject agreements with industry and provincial governments with a view to:***
  (a) cancelling subsidies to projects such as Hibernia, Lloydminster Upgrader and OSLO because they carry significant environmental risks and create unfair competition for more environmentally sound energy systems;
  (b) encouraging provincial resource policies, programs and projects that benefit the environment.
- ☐ ***By 1990, repeal the federal Nuclear Liability Act.***
- ☐ ***By 1990, direct the Cabinet Committee on the Environment to commence a review of the environmental effects of federal subsidy programs.***

and job development goals. For example, the federal incentives could spur the growth of Canada's energy conservation industries.

Finally, we urge Parliament to revisit a particularly unfair hidden subsidy, the federal Nuclear Liability Act. It acquits companies of any legal responsibility if equipment fails or poor management causes an environmental accident. It also limits compensation of victims by the plant's operators to $75 million. That's unfair to the public and to other energy systems that don't have the same federal benefit.

Keep pace with new technologies

The tax system should promote a cleaner environment by encouraging environmentally sound practices and discouraging manufacturing, energy use and consumer behavior that produce excessive waste and pollution.

Technological advances threaten to overwhelm Canada's regulatory system. Recent advances in the food irradiation and biotechnology industries particularly concern many scientists, who worry that the health and environmental effects of these technologies have not been adequately assessed. Yet the industries are going ahead marketing new technologies and products based on them, often with official federal sanction.

From the point of view of consumer safety, food irradiation technology needs more careful scientific review in Canada than it has yet received. While radiation is not a "substance," it can profoundly affect the chemical composition of any food it bombards. In 1987, the Standing Committee on Consumer and Corporate Affairs urged that the remaining scientific uncertainties be resolved before widespread use of the technology was permitted.

But in April 1989, the federal government authorized the sale of irradiated foods on a case-by-case basis. Health and Welfare Canada officials must not grant any approvals until doubts are resolved.

Canadian corporations must not be permitted to test technologies not yet approved for use in Canada in the Third World. For example, Atomic Energy of Canada Limited (AECL), a Canadian crown corporation, is selling food irradiation equipment to Third World countries, when the foods these countries will be irradiating are not considered safe for Canadian consumers. A good example is Thailand, which received Canadian foreign aid to purchase irradiation equipment for use on shellfish and sausages, neither of which can be sold in Canada in their irradiated form.

If irradiated foods are to be permitted, proper labelling is essential. The new labelling regulations exempt companies from indicating on the label that ingredients have been irradiated, as long as no single irradiated ingredient comprises more than 10 percent of the product, even if several irradiated ingredients add up to more than 10 percent of the product. These regulations must be amended to impose mandatory labelling if the product contains any irradiated food.

Recommendations

- ☐ ***Immediately impose a ban on the sale of irradiated food in Canada until adequate scientific assessments are conducted, in line with the recommendations in Parliament's Standing Committee on Consumer and Corporate Affairs 1987 report.***
- ☐ ***Immediately allow wider public participation in the CEPA regulatory decision-making process that is now underway for genetically-engineered products and incorporate provisions into the process that allow adequate time and resources for scientific assessments of these products.***

Advances made by the biotechnology industry also need much closer scrutiny. While society may benefit from advances such as new drugs or microorganisms that decompose oil spills, genetic engineering often involves the creation of entirely new

> ***"Pollution taxes can serve as an alternative to federal and provincial environmental standards in cases where they are more efficient and less costly than standards."***

and unpredictable new life forms.

Some companies are already being allowed to market their products without full scientific and public assessments. In preparation for the recent Calgary Olympics, for instance, a product called Snomax®—protein granules that are derived from biologically manipulated bacteria—was used to enhance the dryness and lightness of snow cover on ski runs. The product has not yet received adequate assessment in Canada.

Under the Canadian Environmental Protection Act (CEPA), the federal government is currently developing an inter-departmental regulatory process for genetically engineered products. It is doing so, however, without adequate participation of the public. We urge the process be opened up wider to public participation, and that adequate time and resources for scientific assessment be incorporated into the regulations to ensure genetically engineered products don't inadvertently wreak havoc on the environment.

Introduce environmentally sound tax policies

Genetic engineering and other new technologies potentially offer promising new products, but are being marketed and developed much faster than their environmental risks can be assessed by government. Regulatory approaches must keep pace.

Our economic system does not factor environmental costs into industry's accounting ledgers, except when a company incurs costs to comply with environmental laws. Moreover, when consumers buy produce or merchandise, the prices they pay don't necessarily reflect the environmental damage that may accompany the production, marketing and eventual disposal of the product. Ironically, the most environmentally sound products, like organic food free of pesticide residues, often cost more.

Our economic system must be changed so that it helps to prevent, rather than to encourage, pollution. Many economists have long advocated taxes on pollution to help the market favour products that cause less environmental damage and to hold polluters accountable for the damages they cause. The products that cause more pollution would cost more because their price would reflect the cost of damages and eventual cleanup. Certain tax policies, such as those that allow companies to accelerate depreciation of pollution control equipment do help, but more are needed.

Pollution taxes can serve as an alternative to federal and provincial environmental standards in cases where they are more efficient and less costly than standards. These include situations where pollution and its cleanup are site-specific, or when clean-up technologies are impractical or too expensive.

One class of pollution that especially lends itself to taxation is solid waste. Households and industry generate prodigious amounts of solid waste that are straining the financial resources of local governments. We urge federal tax reform and new federal waste-cleanup initiatives that foster provincial tax reform, to make waste generators pay for the cost of waste disposal.

Recommendations

- ☐ ***Immediately begin a review of federal tax policies to develop initiatives ensuring that waste generators pay for the cost of waste disposal.***
- ☐ ***By 1991, enact a national carbon tax to raise up to $40 billion over a 15-year period to finance:***
  (a) a national energy conservation program to reduce Canada's carbon emissions;
  (b) a national reforestation program to recycle carbon emissions that do occur;
  (c) completion of Canada's national and marine park systems.

Another kind of waste is ripe for tax reform—carbon emissions from the burning of fossil fuels. Global carbon emissions, scientists believe, are contributing to an unprecedented warming of the earth's climate.

One way of slowing down climate warming being widely discussed in many countries is an excise tax on the carbon contained in fossil fuels. Such a tax would raise the price of using fossil fuels, whether for automobile transportation or coal-fired power generation, thereby encouraging energy conservation and raising revenues for programs to reduce or recycle carbon emissions. The tax would also encourage a shift to natural gas, the fossil fuel that contains the least carbon—a good idea for Canada given our immense reserves of this clean-burning fossil fuel.

We urge that Canada, one of the world's highest *per capita* carbon emitters, be the first nation to adopt a national carbon tax. The tax would raise revenues for: (a) a national energy conservation program to reduce Canada's carbon dioxide emissions (see page #), (b) a national reforestation program to make Canada greener and to promote recycling of atmospheric carbon and (c) completion of Canada's national park system by the year 2000 (see page #).

Finally, some of the revenues raised by the tax should be used to cushion regressive or discriminatory effects of the tax. For instance, funds might be used to facilitate construction of new natural gas pipelines to ensure distribution of the cleanest and least-taxed fossil fuel to parts of Canada, such as the Atlantic provinces, that don't now have access to it.

We recommend the tax be set to raise $35 to $40 billion over the period 1991 to 2005. Given 1988 National Energy Board projections of fossil fuel use, the tax would raise $3.2 billion in 1990, rising to $3.7 billion annually by the year 2000. For gasoline and diesel fuel, the tax would levy 2.5 cents per litre in addition to the current 9.67 cents combined federal sales and excise taxes, an increase of about 25 percent in the federal tax and five percent in the price of gasoline.

The tax would raise revenues for national programs that are essential to Canada's ecological and economic security. It would also help repair nature's carbon cycle and make our economy more internationally competitive by encouraging more efficient use of energy.

Make foreign aid more accountable

Foreign aid institutions must be accountable to the people of Canada and the Third World if our aid is to promote sustainable development.

The legacy of environmental damage and human suffering caused by Canadian-funded foreign aid agencies, such as the Canadian International Development Agency, the World Bank and the other multilateral development banks, continues to grow. These agencies have financed hydroelectric dams, cattle-ranching schemes, massive resettlement programs and other ill-conceived development projects that have destroyed millions of square kilometres of pristine tropical rainforests and prime farmland.

The subordination of Canadian foreign aid to Canadian commercial interests is particularly inappropriate and often subverts the very purpose of foreign aid, which is to help the people of the Third World. For example, CIDA has financed a feasibility study of China's proposed Three Gorges Dam. This hydroelectric project would be the world's largest, and it would resettle more than one million people. The study, contracted to a consortium of Canadian engineering firms and electric utilities, recommended that the project go forward at an early date, even though a detailed assessment of the environmental and social costs and benefits would not be completed until 1990.

China recently said that it could not now afford the project and announced a five-year delay in its schedule. Stinging criticism of the project from environmental organizations throughout the world may have been a factor in its decision.

CIDA also gave Thailand $4 million to help finance its purchase of a Canadian food irradiation plant, even though a recent Canadian Parliamentary Standing Committee inquiry concluded that the scientific uncertainties concerning the safety of irradiated food need to be resolved before wide application of the

Make foreign aid more accountable

Recommendations

- ☐ ***Immediately:***
  (a) begin voting "nay" to development projects proposed by multilateral development banks that cause environmental destruction and involuntary resettlement of people;
  (b) make Canada's voting record in multilateral development banks fully public.
- ☐ ***Immediately begin shifting foreign aid to projects that promote sustainable development, especially in the areas of forestry, energy conservation, and protection of cultural and biological diversity in the tropical rain forests.***
- ☐ ***Immediately make all aid agreements conditional upon the recipient government meeting adequate standards of public disclosure, review and participation in the decisionmaking process.***
- ☐ ***By 1990, amend the Access to Information Act to give Canadians the right to see all documents pertaining to the environmental, social, technical and economic viability of foreign aid projects.***

technology is permitted in Canada.

Furthermore, the secretive manner in which the major aid agencies operate violates the important principles of public accountability and participation in government decisions. Exemptions to the *Access to Information Act* allow government institutions like CIDA and the recipient country to keep environmental assessments of aid projects secret.

Furthermore, neither CIDA nor recipient countries are respecting the right of Third World citizens to an open environmental assessment process. As a result, not only Canadians, but people of Third World countries, are shut out of the decision-making process. In addition, the voting record of Canada in multilateral development banks is kept secret, and Canadians have no right to know how their government votes to spend the more than $500 million provided each year to these agencies.

The federal government must respect the rights of Canadians to be fully informed about Canada's foreign aid policies and projects.

First, we urge immediate amendment of the *Access to Information Act* to ensure the public has full access to the documents pertaining to the environmental, social, technical and economic feasibility of aid projects.

Second, we urge CIDA to refuse to fund—and Canada's representatives at multilateral development banks to vote "nay"—to megaprojects such as large dams that destroy tropical rainforests or that involve the involuntary evacuation and resettlement of people. Furthermore, CIDA should shift its aid towards projects that promote sustainable development in the Third World, in areas such as forestry, energy conservation and protection of cultural and biological diversity in tropical rainforests.

Third, the federal government must keep a record for public disclosure of how each representative of Canada at the multilateral development banks votes on every loan.

Finally, aid agreements must be conditional on recipient governments meeting adequate standards of due process as enunciated by the Brundtland Commission, including the right of the public to know, to be consulted and to participate in decisions that directly affect them, and to legal redress when their environment and land base have been violated.

Support aboriginal sustainable development

Aboriginal communities can develop local and regional models of sustainable development, providing their rights to self-government are clarified.

Many of Canada's aboriginal people live close to the land. They understand sustainable use of renewable resources because they depend on wildlife and fish for survival. Many aboriginal communities, therefore, are extremely vulnerable to economic development that affects harvesting of these resources.

“Aboriginal peoples want and deserve more control over their resources.”

As well, many Indian reserve lands are too small to support their population adequately. Indian communities consequently depend on adjacent provincially managed Crown lands for hunting and trapping, but these lands are under increasing pressure.

The aboriginal economy of the Cree of Lubicon Lake, Alberta, offers a good example. The average annual income from hunting and fishing was $5,000 per capita in 1980, mostly from wildlife harvesting. Six years later, after oil and gas development occurred on the band’s traditional hunting and fishing grounds, income from wildlife harvesting plummeted to about $400 per capita.

Aboriginal peoples want and deserve more control over their resources. Unfortunately, the constitution is unclear on the question of aboriginal rights to self-government, despite several federal-provincial conferences on the issue.

We urge a constitutional amendment to assist all levels of government—federal, provincial and aboriginal—to clarify their responsibilities for protecting the environment and conserving resources. Clearing up the constitutional question would also help ensure that aboriginal peoples have a say in decisions that affect the natural resources upon which they depend. Joint management regimes between aboriginal peoples and governments for resources such as wildlife will prove to be useful ways to ensure conservation remains the top priority, while respecting aboriginal rights and concerns.

The Brundtland Commission, recognizing that economic development generally compels the gradual assimilation of local communities into a larger social fabric, saw the need to empower aboriginal communities to protect their traditional way of life. “It would be unfortunate,” said the Commission, “to allow these communities, with their vast knowledge of complex ecosystems and their links to ancient origins to disappear. It is a terrible irony that as formal development reaches more deeply into rain forests, deserts and other isolated environments, it tends to destroy the only cultures that have proved able to thrive in these environments.”

Recommendations

- ☐ ***By 1990, begin the process of amending the constitution to clarify aboriginal rights to self-government.***
- ☐ ***Immediately begin review of federal-provincial resource agreements to ensure aboriginal communities have adequate access to traditional hunting and fishing grounds on provincial Crown lands.***
- ☐ ***Immediately urge the National Round Table on the Environment and the Economy to consider aboriginal models of sustainable development.***

Unfortunately, Canada’s response to the Brundtland Commission, the National Task Force on Environment and Economy, paid scant attention to aboriginal issues, even though much of Canada’s future economic development could affect their communities.

We urge the National Round Table on the Environment and the Economy and the federal government generally to pay more attention. Since Indian and Inuit people and their lands fall under federal jurisdiction, Canada must more fully recognize the potential these communities could have as local and regional models of sustainable development. The National Round Table must adopt as one of its primary goals the identification of roles that aboriginal communities can play in the implementation of sustainable development in Canada.

In addition, the federal government must re-evaluate its resource agreements with the provinces to help ensure that aboriginal people have sufficient access to hunting and fishing grounds on Crown lands surrounding their communities and are involved directly in resource management decisionmaking.

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C51C3.

MAR. 9

CHAIRMAN'S ADVISORY COMMITTEE ON ENVIRONMENTAL ISSUES

AGENDA

DATE AND TIME:	Friday, March 9, 1990 8:30 a.m.
PLACE:	Committee Room, 15th Floor Regional Offices

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1. GENERAL

a) **Declaration of Interest** re: Municipal Conflict of Interest Act
b) **Minutes of Chairman's Advisory Committee on Environmental Issues Committee Meeting - February 9, 1990**
c) **Delegation:**
  - **The Bruce Trail Association**
    Mr. Ian Reid
    Concern with the lack of access across the proposed north south/east west Red Hill Expressway.

2. NEW BUSINESS

2.1 By-Law on Chlorofluorocarbons, Report No. LS-90-14

a) That the Commissioner of Legal Services not prepare a Regional By-Law on chlorofluorocarbons.

b) That the Council of the Regional Municipality of Hamilton-Wentworth request the Ministry of the Environment to actively and aggressively pursue initiation, implementation, monitoring and enforcement of strong legislation and regulations which address issues of the making, use, transfer, display, transportation, storage, recycling and disposal of CFCs.

2.2 Educational Tours on Environmental Interest

Councillor B. Hinkley to discuss this item.

3. FOR THE INFORMATION OF THE COMMITTEE

That the following items be received for information:

a) Acceptance of household hazardous waste at Regional Transfer Stations.
b) Bell launches innovative recycling initiatives.
c) Waste Disposal - Disposable Diapers.
d) Degradable Plastics - Fact or Myth?
e) Glass jars, plastic containers, plastic bags, egg cartons, etc.
f) Cloth diapers come out on top.
g) Amity Donation Centres

4. ADJOURNMENT

1 · (b)

MINUTES OF THE CHAIRMAN ADVISORY COMMITTE ON ENVIRONMENTAL ISSUES

The Chairmans Advisory Committee on Environmental Issues met at 8:30 a.m. on Friday, February 9, 1990 in the Committee Room, 15th Floor, Ellen Fairclough Building, Hamilton.

Present:	Chairman (Councillor) J. Prentice Councillors G. Copps, B. Hinkley Brian McHattie, Ken Ingham, William Pedder, Prof. Keith Murphy
Also Present:	Dr. Keith Rodgers, Ian Reed, Ted Gill, Val Terluk, Norman Ragetlie, Councillor D. Ross

1. GENERAL

a) **Declaration of Interest** re: Municipal Conflict of Interest Act (NONE)
b) **Minutes of Chairman's Advisory Committee on Environmental Issues Committee Meeting - January 12, 1990** (Copps/Pedder)
Be received and adopted as amended by changing the word affluent to effluent on last page.
c) **Errors and Omissions**
d) **Business Arising out of Minutes** (NONE)
e) **Delegations:**

i) **Hamilton Harbour Remedial Action Plan**
Presentation by Dr. K. Rodgers from the Canada Centre for Inland Waters.

Dr. Rodgers addressed the Committee on the problems associated with the quality of water in Hamilton Harbour. He indicated that in 1986 a Stakeholder Group of interested elected officials, agency staff, environmental groups, ratepayer organizations, academics, business leaders and industry representatives came together to set the goals and principles under which a plan should be developed.

He advised that the costs to clean up the Harbour is estimated to be $150 - 175M and that possibly $50M could be saved by improvements to the sewage treatment plant and combined sewer overflows.

He indicated that the Region has committed approximately 21 million dollars to improving the existing system.

Mr. Gill advised that there is one combined sewer overflow holding tank in the Capital Budget for Hamilton-Wentworth and another being actively considered adjacent to the former Lax property, and this would improve the combined overflow system.

Dr. Rodgers advised that a draft called "Preferred Options Report for Hamilton Harbour" dated January 1990, is now in the hands of the shareholders for review and comment. The public will be able to comment on the report after the shareholders complete a review of the preliminary draft.

Councillor Prentice indicated that the Region has little control over the Harbour other that at the Sewage Treatment Plant.

The Planning Department and/or Committee have jurisdiction over the Harbour.

Mr. Pedder asked about P.C.B. pools in Lake Ontario. Dr. Rodgers advised that he was not aware of any.

Mr. Pedder asked if sewer discharges from industries are being sampled by the Region. Mr. Gill advised that the Industrial Waste Division of the Engineering Department is sampling these discharges, per the new Sewer Use By-law.

ii) Zebra Mussel Contamination of the Great Lakes

Mr. McHattie advised that the Ministry of Natural Resources Division Fisheries and Oceans has jurisdiction for Zebra Mussels contamination of the Great Lakes. Mr. McHattie advised that ships dumping water at sea may cause safety problems. By mixing CO2 into the ballast tanks this would kill any life forms.

The Zebra Mussels are presently in Lake Erie and in the larvae stage are carried by the currents. It is estimated that they travel 240 kilometres per year and they are present in the Welland Canal; and it is anticipated they will be in the Hamilton Area in 1991. It has been suggested that in 6 to 7 years the Zebra Mussel infestation will be at a maximum and it is hoped that natural sources such as ducks and other predators that live close to shore may eat them and restore the balance of nature.

That the following items be received for information
(Pedder/McHattie)

2.1 (a) Letter from P. Muldoon, R. Baetz and B. McHattie.
Councillor Prentice indicated this is still under review.

(b) Disposable Diapers and the Environment

Mr. Ingham indicated that we should be encouraging diaper service agencies. Mr. Terluk advised that the present system of disposal diapers is illegal as the users do not scrape the diapers.

It was indicated that 200,000 tons of diapers are disposed of annually in Canada. It was also indicated that the average baby goes through $2,500. in disposable diapers and if a diaper services was used this cost could be cut in half. If the diapers are purchased and washed at home this cost could be cut to 1/3. (See attachment)

(c) Noranda Thorold Plant gets $ 7,000,000. for recycling.

(d) Greenpeace urges support of the adoption of a CFC Control By-law. Councillor Prentice will reply.

(e) Greenprint for Canada - A Federal Agenda for the Environment.

CARRIED

3. OTHER BUSINESS

Environment Conference 1990

Councillor Prentice advised that the Conference had been tabled at Regional Council on February 6, 1990. Councillor Ross, Chairman of the Economic Development and Planning Committee had requested that this item be tabled. He indicated that the Conference was a good idea but that the Sustainable Development Task Force was also doing work in this area. He is hoping that a joint committee can be formed at the proper time to co-ordinate the efforts of both committees.

The members agreed that there should be some clarification on where this committee should be reporting to.

Councillor Prentice advised that this committee will do a year end report in the next few months to maybe solve some of the problems with the reporting aspects of this committee.

Bruce Trail Association

Mr. Reed representing the association appeared before the committee to discuss the lack of access across the proposed North South/East West Red Hill Expressway. He advised the committee that at the first open house no provisions were made to cross the expressway. At a second open house access was indicated but that no funds were available for the access. It has been indicated that 2 bridges are required at a cost of $500,000. each.

Mr. Ingham suggested that this committee support the Bruce Trail Association and request that the Freeway Committee provide access across the proposed Red Hill Creek Expressway. Mr. Gill and Mr. Murphy argued that the committee should not take a position without hearing from Dale Turvey, hopefully at the next meeting.
(Murphy/McHattie)

However, it was suggested that the Chairman write a letter to the:
i) Ministry of Municipal Affairs
ii) Ministry of Transportation
iii) Ministry of Tourism

Asking why the Ministries have not provided funding to maintain the link for access along the Bruce Trail across the expressway. CARRIED

Recycling of Cans

Mr. Pedder advised that industries do not have any problems with accepting any quantity of recycled cans provided that the product is not contaminated with other products.

4. **NEW BUSINESS**

    1. Ontario's Niagara Escarpment named Biosphere Reserve by UNESCO. (Copy Attached)

    2. City to study pollution success, failures, Dated October 1, 1980. (Copy Attached)

On Motion (Murphy/Copps) the Committee **ADJOURNED** at 11:25 a.m. **CARRIED**

Chairman

John L Ramsay

Secretary

2.1 (b)

by Hélène Meurer

A Disposable Habit

Throwaway Diapers

The Consequences and Alternatives

In the 30 years since they were first developed as a by-product of the pulp industry, the disposable diaper manufacturers have gradually convinced parents that they are a necessity. More recently however, the implications of their widespread use has become evident. While media attention focuses on improper disposal methods and the disastrous effects on the environment, the voices of parents are now being heard, implicating the use of disposable diapers with various health problems in babies. Our fragile ecosystem is ready for a return to more natural diapering alternatives. Lessons learned from great-grandmother, combined with technological production innovations, offer healthy, convenient choices in cotton diapering.

Effects on the Environment

Of prime concern, because of its highly visible nature, is the sheer bulk of disposable diapers that accumulate daily in landfill sites. Although disposal of human excrement in residential garbage is prohibited, enforcement of this law appears to be non-existent. Manufacturers' labels suggest consumers rinse diaper liners and dispose of the plastic backing in a "sanitary" manner. A representative for *Proctor and Gamble*, the leading manufacturer of disposables, has said that "Rinsing them is a basic instinct of people and the instructions reinforce that." Yet the public's behaviour indicates otherwise. Deryck Matthews of *Stork Laundry Service* in Vancouver suggests that if disposal instructions were enforced, the work involved would inevitably make cloth alternatives more appealing, and no one would use disposables.

Most Canadian babies send half a ton of waste diaper material to sanitary landfills before they are toilet trained. That makes for at least 200,000 tons of garbage annually. As well, disposables use plastics that resist deterioration in the presence of ammonia and uric acid, which take as long as 500 years to decompose. Add to this the amount of valuable wood pulp and petroleum used, and the implication of one child using disposable diapers for a two-year period is staggering.

When soaked with feces and urine, the diapers become fire resistant, but toxic gases and PVCs (poly vinyl chloride) are released into the atmosphere as the plastic smolders. In addition, human waste (and *particularly* baby stools) can carry more than 100 different intestinal viruses. Though modern sanitation methods have made sewage related diseases such as hepatitis, Shigella, salmonellosis, and typhoid practically obsolete, outbreaks of these are now more common in hospitals and day-care centers where workers regularly handle disposable diapers. Communicable solid waste diseases are mainly spread in this manner, and sanitation workers are always at risk. Live polio virus, for example, may be excreted from a vaccinated infant for weeks.

As a way of responding to the barrage of irrefutable bad press, the major diaper companies have lost no time in spending money on research and development. Biodegradable diapers have just hit the market, but this is a smokescreen that unfortunately does not solve the problem. Some biodegradable diapers use a photo-sensitive plastic which disintegrates when it comes into contact with direct sunlight. Since most household garbage is at least double-bagged, and quickly buried at the dump, exposure to air and sunlight is virtually nonexistent. Biodegradable diapers will only contribute to the pollution problem, as fecal viruses leech into the soil and ground water, polluting private and public water supplies at an even faster rate.

It is precisely these factors which prompted the Ecology Centre of Ann Arbour, Michigan to name disposable diapers "The Most Wasteful Product of the Year" for 1986. Several communities in Canada and the US have tried, unsuccessfully, to ban the sale and use of disposable diapers. Most recently, a concerned city council in Peterborough, Ontario called for such a ban, which was not passed. But public attention has certainly increased. Diaper services find the majority of their customers are environmentally motivated. Indeed, such services should be viewed as "recyclers" to which government-funded incentive programs would apply. These could take the form of a tax on disposable diapers, or the calculated avoided disposal cost could be rebated back to the diaper services.

6. Effects on Baby

In addition to environmental damage, it goes without saying that paper, plastic, polypropylene, polyacrylate, chemical perfume, and glue can cause a variety of health problems when placed next to baby's skin for any length of time.

The most common condition associated with use of disposables is diaper rash, a 20th century problem resulting from modern methods of babycare. Marketers of disposable diapers claim their product "keeps baby drier—*longer*." Does this mean the paper-clad baby urinates less often? Obviously the implication is that parents don't need to change baby as often, because of the magic "stay-dry lining." Interestingly, to counteract diaper rash, doctors frequently advise mothers to switch to cloth diapers. Concurrently, diaper services find 20% of their new clients come when babies are 13 weeks or older and disposable related rash problems have occurred.

The super-absorbent diapers so popular today are a mixture of polyacrylate crystals and bleached pulp fluff. This compound turns to a gel as it absorbs 50-80 times its weight in liquid, while maintaining a new "streamlined" look. Moisture is drawn into the lining, and diapers often feel dry, when in fact, wet. The plastic backing heats baby's skin 5° to 10°(F) warmer, and cultures an environment for bacteria to form so that urea in the urine changes into ammonia. The baby's sweat glands are blocked, and as the super absorbent lining has also removed essential oils from the skin, any amount of friction from the diaper itself will now cause a rash. A Canadian medical study shows that diaper rash is three times more likely to occur with disposables. Considerable discomfort can be avoided by using cloth diapers and natural diaper covers.

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Pampers Ultra Absorbent diapers have been linked to many health hazards, and have subsequently been removed from several hospitals. Once endorsed by the American Pediatrics Association, this product was withdrawn from their list because of numerous complaints from physicians. Rashes that oozed blood occurred frequently, and there have been instances where the polyacrylate crystals burst from the lining, entering babies genitals and causing infection. Many complaints were fielded by the *Pampers* toll-free hotline, thereby watering down the attention by doctors and media. *Procter and Gamble* claims to have since made production changes, yet complaints persist and new packaging reveals reassuring messages that the product is indeed safe.

Disposable diapers have been responsible for injuries and death through swallowing, choking, inhaling, suffocation, and burns. Perhaps most tragic are incidents such as occurred to an Ontario woman, whose child almost choked himself to death on the diaper's plastic coating. He suffered from lack of oxygen and is now severely brain damaged. Statistics on such tragedies exist but are inaccurate. Most [illegible] unreported or are not listed as a specific accidental cause.

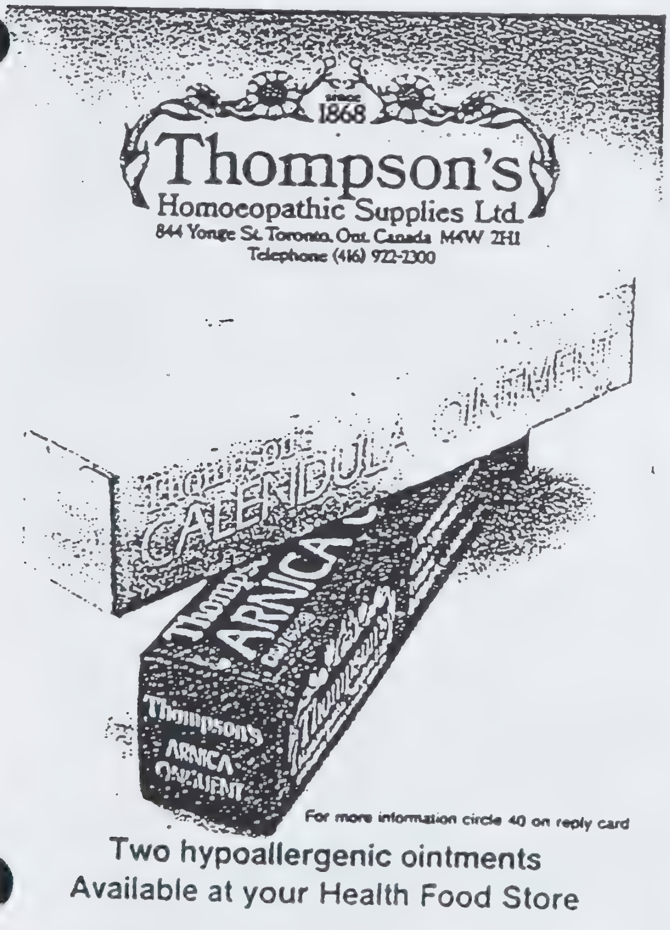
Both consumers groups and representatives from the medical profession have campaigned for warning labels on packaging. These would advise parents not to leave children unattended near open boxes of disposable diapers, that diapers should always be worn under clothing, and that diapers should be inspected for sharp foreign objects sometimes left over during processing.

Why use them?

Despite the facts, the popularity of disposable diapers is somewhat understandable. Extremely competitive advertising techniques aimed at pregnant women as well as fathers (who share increasingly in diapering tasks), have secured 85% of the total diapering market. The average age of new mothers in Canada today is between 20 and 40 years. Three quarters of these will return to work on a part-time or full time basis. With extra money but little time, they become prime targets for advertising campaigns. The bottom line is convenience—no folding, pins, plastic pants or laundering is necessary. They do not seem to be as aware of their baby's comfort, health, and safety.

Unfortunately, many people still do not realize how much hospitals and the medical profession can be influenced by big business. Diaper companies compete for the privilege of "placing" their product on maternity wards, a tactic that implies medical endorsement and guarantees brand loyalty from new mothers who are also bombarded with free samples and money-saving coupons. With disposable diapers you pay as you grow, so mothers of newborns are often unsuspecting of the costs involved over time. They have coupons, small-sized diapers cost less, and the disposable industry has a new customer.

Most disposable users do not realize the magnitude of the problem they create. What is picked up from the grocery store shelf is what gets thrown away. Try storing the soiled diapers of a two and a half year period in your back yard and the message will soon hit home. Nor do they realize the financial implications. Over the same time period, the cash outlay of this convenience is close to $2500.00, a cost that easily outweighs all of the alternatives.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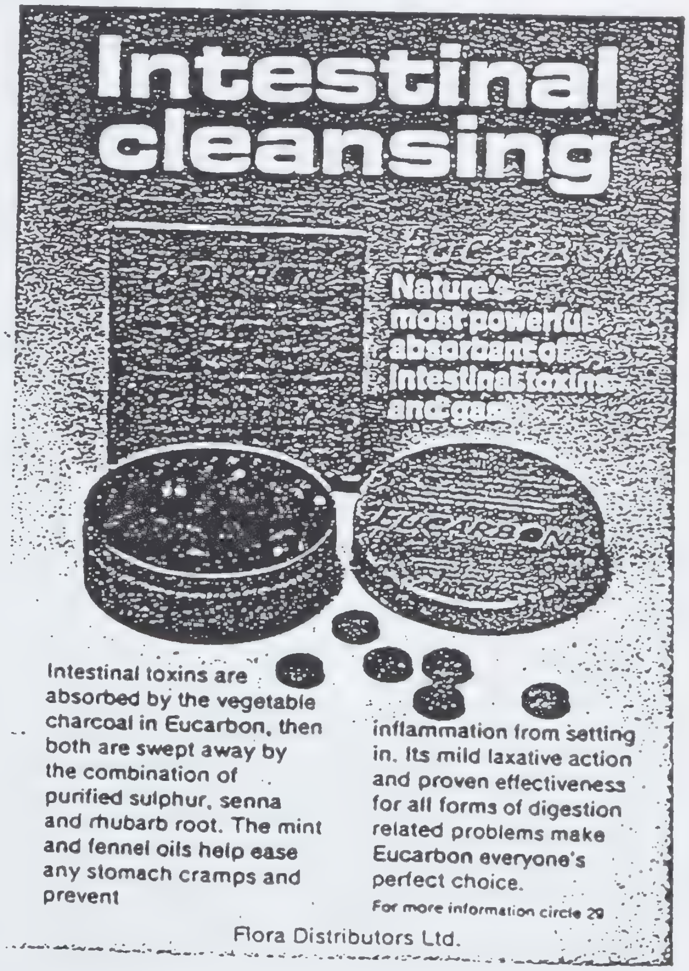
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What are the Alternatives?

The cloth diaper has come a long way. Today's alternatives are every bit as convenient as disposable diapers, and cost much less. Another incentive is that these are almost exclusively Canadian products. The 15% of parents who use cloth diapers are divided into three groups: those using "squares" laundered at home, those who use a diaper service, and those who use and launder "pre-fitted" cotton diapers. Health conscious parents use wool, nylon, or polyester diaper covers that allow air to circulate and, depending on the brand, sometimes eliminate pinning. Possibly the biggest advantage to using your own cloth diapers is that it involves only one major purchase. In contrast to disposables, the cost *decreases* dramatically when second and subsequent children are born.

Traditional squares are the cheapest way to go, costing about $500 total (includes cost of soap, diaper pail and hot water) for a two and a half year period. Though rinsing, laundering, folding and pinning may be a nuisance, diaper rash is generally not a problem, especially when breathable diaper covers are used.

A diaper service such as *Stork Laundry Service* in Vancouver costs about only half as much as disposables and the major inconvenience (laundering) is eliminated. Those concerned about detergents and chemicals need not worry. Stork uses soap, and rinses diapers at least 10 times during the cycle. Local diaper services vary in procedure, but in Vancouver Stork adjusts the pH level and adds a bacteriostatic to further discourage diaper rash. They provide a free baby magazine and newsletter, and will visit the home of parents who need extra help with diapering—and all this for about $11.00 a week!

The latest breakthrough in diapering is the pre-fitted diaper of which Canada has three main manufacturers: "The Indiposables", "Babykins", and "Sweetheart" diapers. These offer all the advantages of disposables and none of the problems. They are very attractive diapers, keep baby happier, and are a treat to use. All are made from from several layers of 100% cotton flannelette, use velcro closures instead of pins, and provide super absorbent liners for double diapering needs. The total cost of these is about one third that of disposables.

Babykins, possibly the fastest growing of the three companies, makes its product available through retail stores everywhere. They are a "one-size" design with tabs that fasten at the back–a handy feature, especially when baby gets older. Fabric at the leg is gathered but because these diapers are designed to fit newborns and toddlers, the fit is not as snug as with some others.

Sweetheart diapers are available from *Baby Love Products*s, Canada's largest mail-order baby supply house. These are also a one-size design, but with elastic at the legs and back, for snug fit. *Baby Love* also sells "Nikky" diaper covers, a Japanese invention based on woolen soakers that grandmother used. Nikkys are very practical and can be used in combination with any cloth diaper.

The Indisposables, made by *Baby Basics* in Vancouver, are available through area representatives across the country. They come in three sizes, fit very well, and are extremely absorbent.

Most companies make small trial packages available for sale. Contact the head office for your nearest outlet. These are definitely worth investigating. And don't think these points only apply to baby diapers. The adult diaper market is also well established; diaper services cater to both age groups, as do some of the cloth manufacturers.

Environment-conscious parents who wash their own cloth diapers can use biodegradable soaps from the health food store. It is best to dry diapers in the sunshine, which acts as a natural disinfectant and is also an energy conservation method. Disposable diapers have their place; if they were used as an emergency convenience only, most of these problems would be eliminated. Which ever natural alternative you choose, you'll be doing everyone, and especially your children, a favour. ❧

Useful Addresses

Baby Basics 491 Pacific Boulevard
Vancouver, BC V5B 5G6

Baby Love Products 5015 - 46 Street
Camrose, AB T4V 3G3

Babykins Products Ltd. 12220 Vickers
Way Richmond, BC V6V 1H9

Hélène Meurer is well known to alive readers from her Best of the Books column. She recently became the mother of a beautiful, healthy baby girl, Natalia Claire

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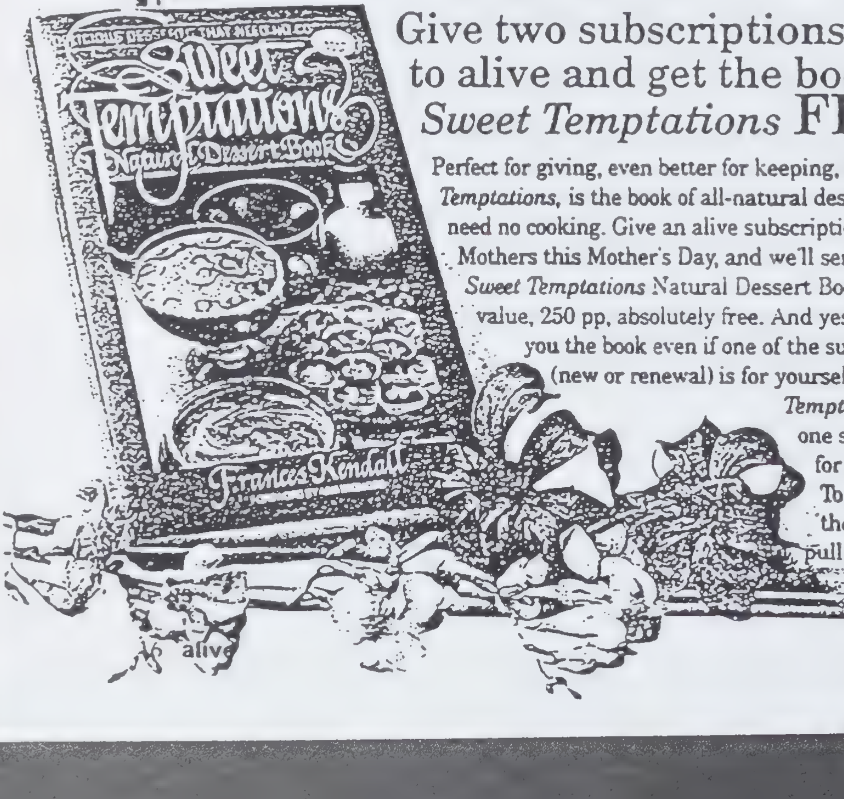

News Release/
Communiqué de presse

N.B. #1

Office of the Premier | Cabinet du Premier ministre

RELEASE: Immediate
DATE: February 8, 1990

ONTARIO'S NIAGARA ESCARPMENT NAMED BIOSPHERE RESERVE BY UNESCO

Ontario's Niagara Escarpment was named a biosphere reserve by the Bureau of the Unesco Man and the Biosphere (MAB) Programme at its meeting this week in Paris, France. Unesco is the United Nations Educational, Scientific and Cultural Organization.

The designation recognizes the unique natural features and ecological importance of the area in which land use is regulated under the Niagara Escarpment Plan.

"The Ontario government is proud of this recognition from Unesco MAB," Premier David Peterson said. "This designation confirms the importance of the Niagara Escarpment internationally as well as locally."

"Ontario will continue to maintain the Niagara Escarpment as a unique natural environment for future generations", said Mr. Peterson. "The Niagara Escarpment is a working example of sustainable development."

A biosphere reserve has a core of relatively undisturbed land together with nearby "zones of cooperation", where the land is being used to meet human needs.

To be designated by MAB's International Co-ordinating Committee, an area must meet rigorous standards.

Designation as a biosphere reserve confirms and supports the land development control programs of the Niagara Escarpment Plan, Canada's first large-scale environmental land-use plan.

There are 276 formally designated Biosphere Reserves in 71 countries. Among these are the Galapagos Islands (Ecuador), Serengeti National Park (Tanzania), and the Florida Everglades (United States). The Niagara Escarpment is Canada's sixth biosphere reserve.

The Niagara Escarpment stretches 725 km from Queenston, near Niagara Falls, to Tobermory, at the tip of the Bruce Peninsula.

It is a unique geological and ecological landscape. Recently, Eastern White cedar trees more than 700 years old were found growing from its cliff face.

-30-

REFERENCE: Premier's Press Office
(416) 965-1931

Richard Murzin
Manager, Communications
Niagara Escarpment Commission
(416) 877-5191

BACKGROUND

The Niagara Escarpment

Ontario's Niagara Escarpment stretches 725 km from Queenston, near Niagara Falls, to Tobermory, at the tip of the Bruce Peninsula. It runs through forest, farmland, town and city.

It was formed 450 million years ago along the shore of a shallow tropical sea that covered a vast area of Ontario and Michigan. Skeletons of primitive sea creatures and debris from ancient mountains were compressed into massive layers of reef and sedimentary rock.

Over succeeding million of years, erosion from glaciers, ancient rivers and lakes, and the elements sculpted the rock layers into their present form.

The Niagara Escarpment Plan

The Ontario government adopted the Niagara Escarpment Planning and Development Act in 1973, which led to the creation of the Niagara Escarpment Plan, Canada's first large-scale environmental land use plan, in 1985. It took more than 12 years, and public consultation with thousands of people, to arrive at the plan.

The plan's seven land use designations encompass 183,000 hectares in eight counties and regions and 37 local municipalities. The plan ensures that the escarpment and lands in its vicinity are maintained substantially as a continuous natural environment, striking a balance between conservation, protection and sustainable development.

The plan calls for the creation of more than 100 parks linked by the Bruce Trail, an end-to-end hiking trail.

A $25 million, 10 year trust fund was established in 1985 to acquire land for the parks and trail. The fund is also used to support conservation of natural and cultural properties, and to promote wise land management and public awareness.

UNESCO's Man and the Biosphere Designation

The Ontario government is proud of the recognition from UNESCO MAB and will endeavour to maintain the Niagara Escarpment as a unique natural environment for future generations.

Background

The area must be representative of one of the world's major ecosystems and there are selection criteria for research, involvement of local people and agencies, sustained protection and environmental education.

The Niagara Escarpment is Canada's sixth biosphere reserve. The others are Waterton Lakes (Alberta), Riding Mountain (Manitoba), Long Point (Ontario), Charlevoix (Quebec) and Mont St-Hilaire (Quebec).

Its natural areas contain more than 300 bird species, 53 mammals, 36 reptiles and amphibians, 90 fish and 100 varieties of special interest flora including 37 types of wild orchids.

N.B. #2

City to study pollution success, failures

Oct 1/80

HAMILTON will make the first comprehensive examination that any Canadian city has made of its pollution successes and failures next month.

The Nov. 14 and 15 conference, proposed by Alderman Brian Hinkley and organized by a committee he chaired, will feature 23 papers on the city's environmental problems, all intended to be in non-technical language.

"I don't know of any other city which has done an update of where it stands on pollution," Mr. Hinkley said in announcing the meeting agenda today.

Former Ontario New Democratic Party leader Stephen Lewis will give the keynote speech to the conference at Mohawk College and Ontario Environment Minister Harry Parrott will speak at a conference-closing banquet.

Many papers will look at the sources and trends of air and water pollution in Hamilton, with specific speeches dealing with the harbor, Red Hill Creek and Cootes Paradise. Further cleanups required will be identified.

Recycled

Papers will also deal with issues such as:

- Whether Hamilton really has a higher lung cancer death rate than other Canadian cities;
- How to get the public to accept waste disposal sites in their areas;
- How various materials are recycled at Dofasco and Stelco;
- How citizens can influence environmental quality;
- How acid rain and other long distance pollutants affect Hamilton;
- How solid waste and sewage are handled in this area.

Hamilton doctor Harry Paikin will urge doctors to become more aware of the influence of pollution on their patients' health and to play a much greater role in pollution control.

One report will show that road dust accounts for 40 per cent of the particles in Hamilton's downtown air and another will trace the levels of various pollutants in the harbor over a 46-year period.

Vladimir Matus, a regional planner, will argue for a careful balance between what is taken from and returned to the environment, a balance that does not now exist.

Only 300 people will be able to buy $10 tickets for the conference and the $20 tickets for conference and banquet.

Donations and registra-

BRUCE TRAIL
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P.O. Box 857
Hamilton - Ontario - Canada - L8N 3N9

1.(c)

BRIEF TO THE REGIONAL CHAIRMAN'S COMMITTEE ON ENVIRONMENTAL ISSUES RE THE IMPACT OF THE REDHILL CREEK FREEWAY ON THE BRUCE TRAIL

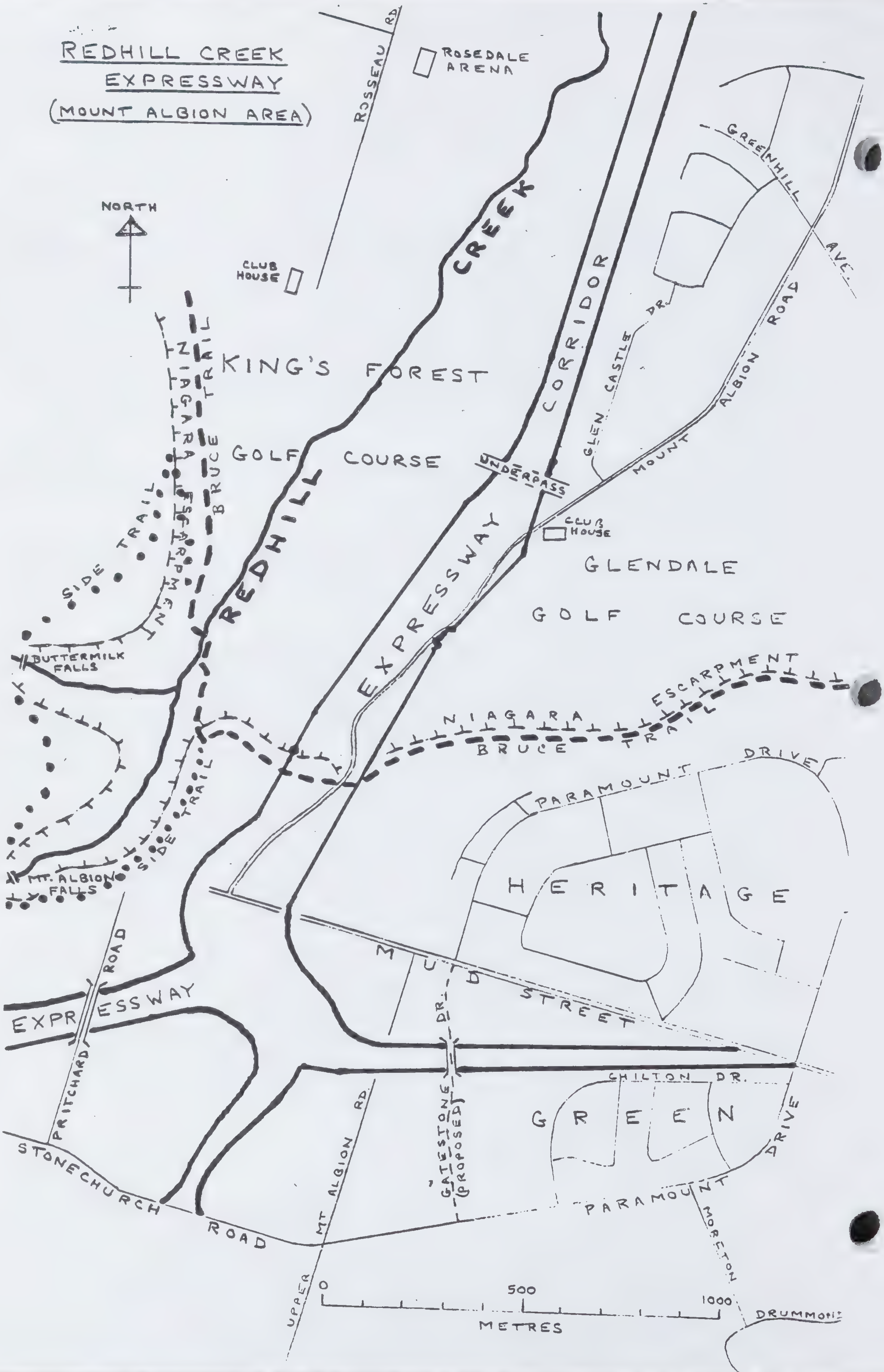
- The Bruce Trail is not a private footpath. The primary objective of the Bruce Trail Association in its Charter of Incorporation is "to establish and maintain for the use of the public a trail along or adjacent to the Niagara Escarpment and the wild lands associated therewith from the Niagara Gorge to Tobermory on the Bruce Peninsula". Hundreds of members of the B.T.A. regularly work to maintain and improve this trail, thereby performing a public service.
- The Bruce Trail is at present on its optimum route, along the brow of the Niagara Escarpment, between Felker's Falls Conservation Area and King's Forest Park.
- It is the policy of the Ontario Government (Niagara Escarpment Plan section 3.2) to secure a continuous route for the Bruce Trail as an essential component of the Niagara Parks system. This policy is being actively pursued with the help of some funding from the government.
- The current plans for the Redhill Creek Freeway made no provision for the Bruce Trail to cross the Freeway. Correspondence from the Bruce Trail office to the Minister of Transportation requesting funding for a footbridge across the Freeway at the top of Mount Albion Road have so far not had encouraging replies. Discussions with the Freeway Project Office have not resulted in any feasible alternative route for the Bruce Trail.
- Several thousands of residents in Stoney Creek's "Heritage Green" community, who can at present use the Bruce Trail or Mud Street to walk to Mount Albion Falls and the King's Forest parklands will soon be unable to do so. They will have to make a long diversion along Stonechurch Road and north on Pritchard to cross the Freeway, and will likely use their cars to do so. *
- Surely the Government of Ontario and the Region of Hamilton-Wentworth should be positively encouraging people to walk instead of using their cars. Proponents of the Freeway were very ready to give assurances that the Freeway would have minimal effects on the environment and the quality of people's lives. More and more people are now walking for exercise and recreation. There therefore seems to be a very strong case for funding to provide a pedestrian bridge across the Freeway at the top of the Mount Albion Road hill.

* see attached map

Ian Reid
Past President
The Bruce Trail Association

19 Feb. 1990

REDHILL CREEK EXPRESSWAY
(MOUNT ALBION AREA)



THE REGIONAL MUNICIPALITY OF HAMILTON-WENTWORT

LEGAL SERVICES DEPARTMENT
1 JAMES STREET SOUTH, 8TH FLOOR
HAMILTON, ONTARIO

TEL (416) 546-4248
FAX 546-4370

PO

2.1

14 February 1990

Councillor John Prentice, Chairman and
Members of the Regional Chairman's
Advisory Committee on Environmental
Issues

RE: BY-LAW ON CHLOROFLUOROCARBONS
REPORT NO. LS-90-14

==

ORIGIN

On January 16, 1990, Regional Council passed the following resolution:

> i) *That the Regional Solicitor prepare a By-law on chlorofluorocarbons for the Regional Municipality of Hamilton-Wentworth similar to the Toronto By-law and circulate to the appropriate departments, area municipalities and organizations for their comments.*
>
> ii) *That the Regional Solicitor report back to this Committee on this proposed By-law for the March 1990 Meeting.*

This report is to provide the Advisory Committee with the status of the proposed CFC By-law.

ANALYSIS

A. Legislation

The City of Toronto CFC By-law was passed by City Council in April, 1989. At that time, there was very little Provincial or Federal legislation in effect regarding CFCs and therefore jurisdiction over the regulation of CFCs was unclear.

However, on June 20, 1989, the Province gave Royal Assent to Bill 218 (now Part V-A of the Environmental Protection Act) which deals with prohibiting the "making, use, transfer, display, transportation, storage and disposal of specified things containing an ozone depleting substance and of specified things made using an ozone depleting substance".

Bill 218 also gives the Province the authority to pass specific regulations concerning various issues involved in the day-to-day implementation of the Bill. To date, only one regulation has been passed, namely Regulation 394/89 (passed on June 20, 1989), which deals with the issues of banning the transfer of packaging, wrapping and containers made with ozone depleting substances as of September 30, 1989 (i.e. foam packaging) and the banning of things containing an ozone depleting substance that acts as a propellant as of December 31, 1989 (i.e. aerosol cans).

Representatives from the Ministry of the Environment have advised that they are working towards a July 1, 1990 date to file further regulations under this new legislation. Currently **draft** regulations have been prepared in the areas of recycling refrigerant CFCs and banning rigid foam insulation. These draft regulations have been circulated to the involved industries (i.e. Heating, Refrigeration and Air Conditioning Institute, Insulation Foam Manufacturers and the Furniture Industry) and comments were due back in January, 1990.

For your information and working consideration, copies of Bill 218 and Regulation 394/89 are attached. The Ministry could not provide us with a copy of the draft regulations as they are not currently in the full public circulation process.

B. Enforcement

The enforcement of Bill 218 and all resulting regulations will be handled by the Ministry of the Environment. At this time, the Ministry has not delegated responsibility for enforcement to the local level (in contrast to the delegation of authority in the areas of M.I.S.A., septic systems, etc.).

As a result of the passing of Bill 218 by the Province, there has been no enforcement of the City of Toronto By-law to date. It is matter of law that a municipality (a creature of statute) cannot assume jurisdiction in an area already occupied by the Provincial or Federal Government. Further, any legislation passed by a municipality (whether it be a local or regional municipality) must not conflict with any higher legislation. Therefore, since the City of Toronto CFC By-law appears to conflict with the Provincial legislation, it is probably not enforceable in its current form.

CONCLUSION

Given the above, the Regional Municipality of Hamilton-Wentworth has doubtful legal jurisdiction to proceed with a By-law regulating any aspect of CFCs.

RECOMMENDATION

a) That the Commissioner of Legal Services not prepare a Regional By-law on chlorofluorocarbons.

b) That the Council of the Regional Municipality of Hamilton-Wentworth request the Ministry of the Environment to actively and aggressively pursue initiation, implementation, monitoring and enforcement of strong legislation and regulations which address issues of the making, use, transfer, display, transportation, storage, recycling and disposal of CFCs.

Respectfully Submitted By:

Kenneth S. Anderson
Commissioner of Legal Services
and Corporate Counsel

c.c. R. J. Whynott, Regional Chairman

c.c. Terry Cooke, Chairman of the Engineering Services Committee

c.c. Wm. M. Carson, Chief Administrative Officer

c.c. E. M. Gill, Acting Commissioner of Engineering

c.c. J. Ramsay, Committee Secretary

Bill 218 **Government Bill**

2ND SESSION, 34TH LEGISLATURE, ONTARIO 38 ELIZABETH II, 1989

Bill 218

An Act to amend the Environmental Protection Act

The Hon. J. Bradley
Minister of the Environment

1st Reading	February 16th, 1989
2nd Reading	
3rd Reading	
Royal Assent	

Continued from the 1st Session by an Order of the Legislative Assembly of March 2nd, 1989.

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EXPLANATORY NOTES

The making, use, transfer, display, transportation, storage and disposal of specified things containing an ozone depleting substance and of specified things made using an ozone depleting substance are prohibited (section 1).

The Lieutenant Governor in Council is authorized to make regulations respecting the use, transfer, display, transportation, storage, recycling and disposal of things containing or made using an ozone depleting substance. In addition, the Lieutenant Governor in Council may make regulations providing for exemptions from the requirements of the Bill and regulations thereunder (section 2).

Bill 218 **1989**

An Act to amend the Environmental Protection Act

HER MAJESTY, by and with the advice and consent of the Legislative Assembly of the Province of Ontario, enacts as follows:

1. The *Environmental Protection Act*, being chapter 141 of the Revised Statutes of Ontario, 1980, is amended by adding thereto the following Part:

PART V-A

OZONE DEPLETING SUBSTANCES

Definitions

47i. In this Part,

"designated" means designated by the regulations;

"ozone depleting substance" means a chlorofluorocarbon, a halon or any other substance that has the potential to destroy ozone in the stratosphere.

Application

47j. Sections 47k and 47-l apply only in respect of the following ozone depleting substances:

1. CFC-11, also known as fluorotrichloromethane.
2. CFC-12, also known as dichlorodifluoromethane.
3. CFC-113, also known as 1,1,2-trichloro-1,2,2-trifluoroethane.
4. CFC-114, also known as 1,2-dichloro-1,1,2,2-tetrafluoroethane.
5. CFC-115, also known as 1-chloro-1,1,2,2,2-pentafluoroethane.
6. Halon-1211, also known as bromochlorodifluoromethane.

7. Halon-1301, also known as bromotrifluoromethane.

8. Halon-2402, also known as dibromotetrafluoroethane.

9. Such other ozone depleting substances as may be designated.

Prohibition

47k. No person shall, after the 1st day of July, 1989, make, use, transfer, display, transport, store or dispose of,

(a) any thing, other than a prescription drug, containing an ozone depleting substance that acts as a propellant; or

(b) any designated thing or any thing of a designated class if that thing contains an ozone depleting substance.

Prohibition

47-l. No person shall, after the 1st day of July, 1989, make, use, transfer, display, transport, store or dispose of,

(a) any packaging, wrapping or container that is made in a manner that uses an ozone depleting substance; or

(b) any designated thing or any thing of a designated class if that thing is made in a manner that uses an ozone depleting substance.

2. Section 136 of the said Act, as amended by the Statutes of Ontario, 1983, chapter 52, section 23, 1986, chapter 68, section 11 and 1988, chapter 54, section 45, is further amended by adding thereto the following subsection:

Regulations relating to Part V-A

(4a) The Lieutenant Governor in Council may make regulations relating to Part V-A,

(a) designating any matter referred to in the Part as designated;

(b) classifying ozone depleting substances, things containing an ozone depleting substance and things made in a manner that uses an ozone depleting substance, providing for exemptions in respect of any such class from any requirement of the Part or of the regulations made under this subsection, and prescribing conditions for any such exemption;

(c) respecting the making, use, transfer, display, transportation, storage, recycling or disposal of things containing an ozone depleting substance and of things made in a manner that uses an ozone depleting substance.

3. This Act comes into force on the day it receives Royal Assent. Commencement

4. The short title of this Act is the *Environmental Protection Amendment Act, 1989*. Short title bicoke Official Plan or any other approvals as appropriate.

2. Terms of Reference for the Environmental Management Master Plan must be prepared by the Ministry of Government Services and be circulated for comments to the Ministry of the Environment, Metropolitan Toronto and Region Conservation Authority, all other affected government agencies and the public who have indicated interest in the proposed undertaking. The Terms of Reference shall establish a consultation procedure including a liaison committee for the preparation of the Environmental Management Master Plan. The liaison committee shall include representatives from such of the following as wish to participate: Ministry of the Environment, other affected Ministries, City of Etobicoke, Humber College, Metropolitan Toronto and Region Conservation Authority and representative resident's groups.

3. The Ministry of Government Services and Humber College shall implement or ensure implementation of the Environmental Management Master Plan, as amended from time to time, in connection with the amendment of an official plan or the making of a zoning by-law or an approval under any other section of the *Planning Act*.

4. The Ministry of Government Services and Humber College shall retain the services of an environmental consultant to ensure that the provisions of the Environmental Management Master Plan required to be followed by the Ministry and Humber College under the previous condition are in fact complied with and the on-site environmental consultant shall report any deviation from those provisions to the City of Etobicoke.

5. Where any activity which otherwise would be exempt under this order is being carried out as or is part of an undertaking for which an environmental assessment has been accepted and approval to proceed received, the activity shall be carried out in accordance with any terms or conditions in the approval to proceed as well as the conditions of this order.

6. Where any activity which is the subject of this order is being carried out as or is part of another undertaking which is the subject of an exemption order under the Act, the activity exempt under this order shall be carried out in accordance with any terms or conditions in the other exemption order as well as the conditions in this order.

7. The undertaking exempted by this order does not include any lakefilling activities and any such activities associated with the undertaking may only take place in accordance with approvals under the Act.

8. This order shall expire if construction has not commenced by December 31, 1993. O. Reg. 393/89

James Bradley
Minister of the Environment

28/89

ENVIRONMENTAL PROTECTION ACT

[redacted]
Ozone Depleting Substances—General.
Made—June 30th, 1989.
Filed—June 30th, 1989.

REGULATION MADE UNDER THE ENVIRONMENTAL PROTECTION ACT

OZONE DEPLETING SUBSTANCES—GENERAL

1. The class of things listed in the Schedule is exempt from section 47k of the Act. O. Reg. 394/89, s. 1.

2.—(1) The use, transport, storage and disposal of things containing an ozone depleting substance that acts as a propellant are exempt from section 47k of the Act.

(2) The display for purposes other than sale or promotion of things containing an ozone depleting substance that acts as a propellant is exempt from section 47k of the Act.

(3) The transfer and display of things containing an ozone depleting substance that acts as a propellant are exempt from section 47k of the Act until the 31st day of December, 1989. O. Reg. 394/89, s. 2.

3.—(1) The use, display, transport, storage and disposal of packaging, wrapping and containers that are made in a manner that uses an ozone depleting substance are exempt from section 47-l of the Act.

(2) The transfer of packaging, wrapping and containers that are made in a manner that uses an ozone depleting substance is exempt from section 47-l of the Act until the 30th day of September, 1989.

(3) The transfer of packaging, wrapping and containers that are made in a manner that uses an ozone depleting substance and that are in existence in Ontario on the 30th day of September, 1989 is exempt from section 47-l of the Act. O. Reg. 394/89, s. 3.

Schedule

Class exempt from section 47k of the Act

The following things containing an ozone depleting substance that acts as a propellant:

1. Drugs or medicines that have a "Drug Identification Number" issued under the *Food and Drugs Act* (Canada).
2. Bronchial dilators, topical anaesthetics and veterinary powder wound sprays.
3. Spermicidal contraceptive foams.
4. Release agents for moulds used in the production of plastics and elastomer materials.
5. Cleaners and solvents for commercial use on electrical or electronic equipment.
6. Insulation foam products.
7. Protective sprays for application on high quality photographs used in research.
8. Lubricants used in mining.
9. Products used during flight in the maintenance and operation of aircraft. O. Reg. 394/89, Sched.

28/89

ENVIRONMENTAL PROTECTION ACT

O. Reg. 395/89.
Effluent Monitoring—Inorganic Chemical Sector.
Made—June 30th, 1989.
Filed—June 30th, 1989.

REGULATION MADE UNDER THE ENVIRONMENTAL PROTECTION ACT

EFFLUENT MONITORING—INORGANIC CHEMICAL SECTOR

DEFINITIONS

1.—(1) In this Regulation,

"bi-monthly" means once in each two-month period beginning on the first day of January, March, May, July, September and November;

"bi-monthly period" means a period of two months beginning on the first day of January, March, May, July, September or November;

"characterization" means the analysis of a sample to identify and quantify all of the parameters in Schedule AA;

"combined effluent" means effluent resulting from any intentional combination of process effluent or process materials with cooling water;

"final discharge sampling point" means a location in a process effluent, combined effluent or batch discharge effluent stream situated,

(a) before the place of discharge to a surface watercourse, and

(b) downstream of all additions of effluent to that stream;

"General Effluent Monitoring Regulation" means Ontario Regulation 695/88;

"process change" means any change in equipment, production process or treatment process;

"quarterly" means once in each three-month period beginning on the first day of January, April, July and October;

"semi-annually" means once in each six-month period beginning on the first day of January and July in each year;

"semi-annual period" means a period of six months beginning on the first day of January or July.

(2) The definitions in section 1 of the Gene
Effluent Monitoring Regulation that are not redefin
in this Regulation apply to this Regulation. O. Re
395/89, s. 1.

PURPOSE

2. The purpose of this Regulation is to establi
data base on effluent quality in the inorganic chem
sector that, along with other pertinent informat
will be used to develop effluent limits for that s
and to quantify the mass loadings of monitored
taminants being discharged by that sector into su
watercourses. O. Reg. 395/89, s. 2.

APPLICATION

3.—(1) This Regulation applies only with res
the plants listed in subsection (2) and only with
to effluent streams named in the site-specific m
ing schedules for those plants.

(2) The site-specific monitoring schedule
plant is as set out in the following Table:

GREATER HAMI
REGIONAL MUNICIPALITY OF HAMILTON-V

2.2

January 22, 1990

MEMORANDUM

TO: Councillor Hinkley

FROM: J. Fardell

RE: Educational Tours on Environmental Interest

With the growing amount of concern and interest in the world with regard to the environment and its condition, the interest and concern has grown into the academic issues and solutions that the human race must consider.

When we last spoke, we discussed the advanced programs and initiatives that the Region of Hamilton-Wentworth has established with respect to environment issues and controls. With this, the Region has an opportunity to provide not only to our local academic institutes and industrial interests but possibly international interests, the possibility of educational tours and seminars to be provided by local environmental control initiatives and other related industries.

The educational tour segments of student travel is a market which has been around for a long time. The academic curriculum is the key to establishing the need and interest of the student. An example would be that of history where students and teachers would examine their subject with field trips and possible investigation of historic value. The environmental issue is one such tour or segment which could be tapped into within our Region.

The purpose for writing this memo to you as a member of the Environmental Advisory Committee is to possibly discuss the possibility of establishing a program through a source who is familiar in this field.

Once the program and studies have been established, our department can market this program. We feel this is a great opportunity for Greater Hamilton to show how advanced we are in this field and also to establish ourselves as a model to be studied.

JF/pae

ECONOMIC DEVELOPMENT DEPARTMENT
P.O. Box 910, Hamilton, Ontario, Canada L8N 3V9
1 James St. South, 3rd Floor, L8P 4R5
Tel: Business Development (416) 526-4447
Tourism and Convention Services (416) 526-4222
1-800-263-8590 Fax: (416) 526-4107

I-(a)

THE REGIONAL MUNICIPALITY OF HAMILTON-WENTWORTH

Department of Engineering
71 Main Street West, Hamilton, Ont. L8N 3T4

Tel. (416) 546-4170
Fax (416) 526-6665

Refer to File No. E308-02C
Attention of V. Terluk
Your file No.

February 28, 1990

Councillor J. Prentice, Chairman
Chairman's Advisory Committee on Environmental Issues

Acceptance of Household Hazardous Waste at Regional Transfer Stations

Dear Councillor Prentice:

At your December 14, 1989 Committee meeting you requested Engineering Department staff to investigate and report on hazardous waste disposal issue which was placed on the December 14 agenda by Mrs. R.N. Baetz (Item #6).

In accordance with your Committee's request we brought the issue to the attention of Tricil Ltd. officials who reviewed the reported concern.

Their response, in the form of an internal memo and a letter to the Region's Manager of Solid Waste Operations, is appended for the Committee's review.

We would be pleased to pursue the Committee's requirements further if necessary.

V Terluk

V. Terluk, Manager
Solid Waste Operations

VT/md
Attach.

File # E 308-02C

TRICIL

MEMORANDUM

Date January 2, 1990

To Andre Martineau
Tricil Swaru

From Dan Zavitz
Tricil Hamilton Commercial

Subject COMPLAINT OF TRUCK LEAK

Thank you for your faxed information on the leak from the truck in Ancaster.

We assure you that allowing a truck to leak effluent is strictly out of character for Tricil. Our strict policy is no leaks allowed on Tricil vehicles. Our drivers are instructed to stop the vehicle if a leak or potential leak is seen. Management policy is to immediately go to the scene to investigate, remedy and clean up any leaks. Our preventative maintenance program includes replacing worn or cracked seals on rear hatches of our disposal vehicles so that leaks do not occur.

Concerning this specific complaint, our branch has replaced both the Dispatcher and Operations Supervisor who might have knowledge of this incident.

We appreciate having complaints brought to our attention, so that our high standards can be reinforced.

If you have any questions, please do not hesitate to contact me.

Regards,

Operations Manager

I-(b)

J. PRENTICE
30 DUNNING COURT
DUNDAS
ONTARIO
CANADA
L9H 4K6

Bell News

Ontario Region Edition

Volume 20 No 3 Week of February 5, 1990

Canada Post Postes Canada
Postage paid Port payé
Bulk third class En nombre troisième classe
[illegible]
TORONTO

Bell launches innovative recycling initiatives

GUELPH — A pilot project to recycle Guelph's 1989 telephone directories to produce packing material for the moving industry is just one of several recycling initiatives announced by Bell here on January 23.

Another is the provision of $300,000 in research funding by Bell and its directory publishing subsidiary, Tele-Direct, to discover new uses for recycled directories. At present, they can be converted into such products as egg flats, insulation, card stock, packing material and asphalt shingles as well as cardboard boxes.

A third is a new purchasing policy (details of which will be announced in the spring) under which Bell will buy products with recycled content to help expand markets for recycled materials.

In the pilot project, the City of Guelph will collect last year's directories through its Blue Box program and turn them over to Cleanway Waste Management Systems Ltd., a Cambridge-based recycler which will use the discarded directories to make padding for do-it-yourself movers.

"This pilot project may result in many other communities launching similar initiatives," said Dr. Bob Porter, assistant vice-president, Health, Safety & Environment.

Bell and Tele-Direct have been working on improvements to the 1990 telephone books to make them even more environmentally friendly.

The new Waterloo Region/Guelph directories feature ink derived from canola, a renewable Canadian resource, as well as a cover made from recycled paper stock. In addition, like all 1990 Bell directories, they are bound with biodegradable glue and printed on a lighter weight 20 pound paper stock.

"We are excited about this initiative," said Gerry Horsfall, manager of Bell's Guelph Business Office.

"The new paper, glue and inks we are using make the directories even more readily recyclable. The challenge was in finding a recycler willing and able to do something with them right away, and we have found one with Cleanway."

Dr. Porter said that Bell has made a lot of progress in directory recycling in recent years, "And we are continuing to do so. Bell is committed to leadership and innovation in our efforts to protect the environment. With the co-operation of the community, governments and recyclers, we can make a difference."

RECEIVED I-(c)

February 15, 1990

OFFICE OF THE CHAIRMAN,
Regional Municipality of Hamilton-Wentworth,
Advisory Committee on Environmental Issues,
119 King St. West,
HAMILTON, Ontario

re: Waste Disposal- DISPOSABLE DIAPERS

Dear Sirs:

I read with interest the article in last evening's HAMILTON SPECTATOR under "Dirty diaper disposal a crime"....Hamilton Toddlers.....

Having recently become involved on a volunteer basis with environmental issues, and taken out membership in the CONSERVER SOCIETY OF HAMILTON AND DISTRICT INC., and obtained material from THE HARMONY FOUNDATION OF CANADA based in Ottawa, I feel there are at our "disposal" methods by which society as a whole can deal with the matter of DISPOSABLE DIAPERS.

I received the enclosed letter from The Harmony Foundation of Canada, in which the Project Coordinator states that the City of PETERBOROUGH has banned the sale of disposable diapers. It should therefore be feasible for **all** communities to do the same; if this action were to become province-wide, why not then nation-wide, and world-wide? The offshoot of this could also be the banning of many other non-biodegradable materials from retail and wholesale outlets, so that manufacturers would be forced to turn to other materials for the manufacture of diapers, throwaway containers, packaging, etc.

A copy of this letter is being forwarded to Hamilton City Council, and in the meantime I hope to promote this idea through other channels, as the opportunity arises.

Respectfully yours,

/ft

FRANCES TURNER
(Mrs. G. A. Turner,
121 Hunter St. West,
Apt. 912,
HAMILTON, Ontario L8P 1R2

c.c. to Hamilton City Council,
City Hall,
HAMILTON, Ontario
c.c. to The Editor, HAMILTON SPECTATOR

THE HARMONY FOUNDATION of CANADA

February 7, 1990

Mrs. G.A. Turner
121 Hunter St. W., Apt. 912
Hamilton, Ont. L8P 1R2

Dear Mrs. Turner,

Thank you for your letter about the Home & Family Guide: Practical Action for the Environment, and for sharing your concerns about disposable diapers. The City of Peterborough has banned to the sale of them; perhaps you can approach Hamilton Council to do the same!

We hope you agree that the Guide will contribute to turning concern about the environment into action for the environment. At present, we are drafting a workshop presentation kit to help individuals or groups across the country present the information in their own communities.

Yours truly

Louise Ward-Whate
Louise Ward-Whate
Project Coordinator

Dirty diaper disposal a crime

HAMILTON TODDLERS — or at least their parents — could be starting a life of crime before they're even toilet trained:

"When you're putting out (disposable) diapers with a lot of goop in it, it's illegal to do that," solid waste manager Val Terluk told the regional chairman's advisory committee on environmental issues last week. "It's illegal to put human excrement out for (garbage) disposal."

Mr. Terluk suggests parents scrape or rinse diapers in the toilet before putting them in the trash, or stop using disposables, which are not biodegradeable.

"Getting back to the cloth diaper may very well be the solution," said Mr. Terluk.

Committee members were discussing the environmental merits of promoting cloth diapers over non-biodegradeable disposal diapers.

Disposable diapers make up about 2 per cent of the region's landfill, said Ted Gill, acting engineering commissioner.

Regional officials admit the rule is unenforceable.

Promoting a new environmental ethic through cooperation and education

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19 Oakvale Avenue, Ottawa, Ontario. K1Y 3S3 Ph: (613) 230-7353

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1-(d)

exciting opportunity offered through a process called **stereolithography**. Prototype parts can be generated from concept to finished part (overnight) with no tooling. Stereolithography forms designs or parts from CAD/CAM/CAE generated solid model data. A vat containing a photopolymer is used in conjunction with an ultraviolet (UV) laser beam. Photocurable polymers change from liquid to solid in the presence of the UV light. A controlling computer directs the laser in successive layers across the liquid polymer, solidifying one layer of a prototype part at a time. This technology is currently available in Canada and franchises are being offered. CPI was instrumental in obtaining this opportunity for Canadian processors.

The CPI is actively publishing information on technically significant developments in the polymer field. One such topic is reactive processing. Reactive processing uses an extruder as a mini-reactor to graft a reactive monomer or polymer onto a second polymer backbone. Superior property enhancements, to those achieved with mechanically mixed blends, are possible. The major advantage of reactive-processed materials is their ability to meet tough end-use requirements without the major capital expense of full-scale reactors. In 1987, CPI published a comprehensive review of the research and material developments utilising this innovative technique and because of the overwhelming interest from the industry, they have recently produced a second report updating the patents and technology.

The NRCC has commissioned the CPI to conduct a technology assessment which compares the technological level of Canadian plastics manufacturers to their foreign counterparts. This initiative will provide a profile of the key process technologies of importance to the Canadian economy. It will identify areas where there is dian technology vis-a-vis competitors in ot CPI's aim is to facilitate the establishment o ances between Canadian manufacturers a foreign entities.

One of the goals of CPI, as stated earlier, research at the university level. In order to develop a baseline of current research capabilities, CPI has published a *Compendium of Research in Plastics and Composites in Canadian Institutions*. It sells for $65 to SPI members and lists over 200 researchers in polymers and composites. Also included is a list of available testing facilities.

CPI has helped Canadian companies become more competitive. Sometimes the help is in the form of advising companies who have never used a particular plastic process. CPI recognised the need for a basic document comparing various methods of producing the same parts. Produced in two volumes, these *Comparison of Technologies* reports have just been released. Volume 1 of the reports compares injection moulding, blow moulding and glass mat thermoplastic forming. Volume 2 compares thermoforming, GMT and sheet moulding compound compression moulding. Each volume describes the process, materials and machinery required and compares the manufacturing costs. Typical market data is presented.

The CPI's aggressive programme for 1990 will include the dissemination of technical information via seminars, newsletters, monographs and articles.

For further information or to be added to the CPI mailing list, please contact the Canadian Plastics Institute, 1262 Don Mills Rd., Suite 48, Don Mills, Ont. M3B 2W7, 416-441-3222, Fax: 416-441-1208.

Degradable Plastics — Fact or Myth?

DAVID M. WILES, FCIC

Division of Chemistry, National Research Council of Canada, Ottawa

Several factors have given rise to recent growing concerns about environmental pollution and the need to be more careful about what we use, how we use it and what we do when we are finished with it. These include alarming statistics about the rate at which we are filling up garbage dumps (known in polite circles as sanitary landfill sites) and the threat of neighbourhood incinerators. While there is no doubt that we are generating discardable stuff at an excessive and unprecedented rate, the scientifically illiterate population in virtually all countries is not being presented with much in the way of factual information about the real solid waste problem and what to do about it. Taxpayers would like to think that somebody else should take the blame, and pay for it.

Perhaps because they are synthetic and therefore not natural, plastics are sometimes singled out by the uninformed as being a (if not the) major cause of the solid waste mismanagement problem. This fallacious reasoning is pursued further leading to the outright banning of plastics packaging in some jurisdictions or to the requirement that plastic bags should be degradable; commonly the real intent is biodegradability. Hence the title of this article is in the form of a question. Authentic Canadians will appreciate that the correct answer is maybe.

The nature of plastics

All plastics, fibres and rubbers—both natural and synthetic—consist of molecules having very high molecular weights, from tens of thousands to a million or more. Indeed the uniquely useful properties of polymeric materials derive directly from these high-molecular weights and, when a relatively small fraction of the bonds in a macromolecule are broken (usually much less than 0.01%), the useful mechanical properties are lost. Commonly, plastics (and fibres and rubbers) are stabilized to prolong their useful life. Heat, sunlight and mechanical stress, singly or in combination, will degrade unprotected plastics, sometimes in a matter of months depending on the plastic.

Research over many years in numerous laboratories in several countries has contributed to a detailed, if not complete, understanding of the chemistry controlling the service life of plastics. There are special cases such as dehydrochlorination leading to the discoloration and embrittlement of poly(vinyl chloride) and photo-Fries reactions contributing to the degradation of polycarbonates. Nevertheless, oxidative degradation is a major factor in the degradation of numerous commodity plastics of both the addition and the condensation types. Such degradation may be initiated by heat, unfiltered sunlight, ionizing radiation and mechanical stress or combinations of these. Among the many possible reactions that could be involved, a handful of sequential, free-radical reactions has been generally accepted as the key processes that must be prevented if plastics are to be useful for prolonged periods. Conversely, these are the same reactions that must be encouraged in order to enhance degradability.

Photodegradable plastics

Taking advantage of the fact the window glass filters out solar wavelengths shorter than about 315 nm, scientists have been able to devise plastics formulations that are unaffected by indoor light for long periods but that will photodegrade outdoors in a short (a few months) controlled exposure owing to their susceptibility to wavelengths in the 300 to 315 nm (erythemal) region. These formulations include light-sensitive additives or co-monmer units which contain light-absorbing ketone groups. In the latter category, ethylene/carbon monoxide copolymers represent one product type; the other copolymer approach involves the copolymerization of a vinyl ketone with an appropriate monomer, not restricted to ethylene. There is no question that such products are stable indoors but become brittle and disintegrate as a result of outdoor exposure. They are useful as agricultural mulch which retains moisture and discourages weeds during the growing season but is brittle by the end of the summer and can be ploughed under as an inert soil conditioner. Other uses for photodegradable plastics are containers/holders that are likely to end up as widely dispersed litter. There is some evidence that these products would not, as has been feared, encourage littering. Apparently the hard-core slobs that scatter stuff widely around the countryside do so indiscriminantly.

Biodegradable plastics

Such materials are available and have been for some time. Medical sutures are one example. None of the common commodity plastics are biodegradable, however, and does not become so by admixture with something else that is biodegradable. There are tens of thousands of different kinds of fungus which, under warm and moist conditions in air will convert a wide variety of substrates to carbon dioxide and water. Such conditions rarely occur in garbage dumps and there is archaeological evidence (seriously) that newspapers are readable and food wastes are readily identifiable for more than 10 years after burial. It isn't just the inherently bioresistant materials such as metal, glass and plastics in a garbage dump that persist; virtually all solids do. This is a major problem in the case of discarded paper since it represents about 40% by weight of municipal waste. Rigid plastic containers represent about 7% by weight with about 1% thin-film packaging. To eliminate plastic bags completely would not add to the useful lifetime of a garbage dump. Replacement of such bags would require a greater weight (and higher volume) of something else. If you want to pick on an item that's big and heavy and really difficult to get rid of, try the telephone directory.

Where do we go from here?

Even though the quantities of paper being used and discarded amount to many times more than the total of all plastics, the quantities of the latter add up to several billions of pounds per annum, and this number is predicted to increase significantly. Factories which fabricate plastic articles already recycle all their own scrap. It is now feasible to collect rigid plastic containers in a municipal blue box (or similar) programme. It can be difficult to wash used plastic containers properly (depending on what's been in them) and reprocessing of waste plastics is not uniformly economically viable yet. Of course, recycling old newspapers must also be subsidized some of the time. The ideal plastics utilization programme would involve the initial use followed by several consecutive recycling modes and ending with incineration to recover the energy invested in the material itself. Many plastics are excellent fuels, and modern incinerators are highly efficient and safe. Appropriate technology is either here or being developed.

Perspective

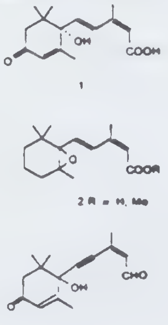
This is what seems to be missing in most discussions of plastics in the environment. The argument that discarded plastics are killing wildlife is not helped by the fact that everyone seems to use the same photo of the entrapped seagull, and recognition is required that photodegradable plastics are available and do work. There are accusations that foamed polystyrene contributes to ozone layer depletion by people who continue to use refrigerators and air conditioners but who don't realize that the use of CFCs for foaming plastics was never very common and is now not really significant. Apparently, however, there is a municipality in California in which a by-law was recently enacted making it illegal to possess foamed polystyrene. The penalty for conviction of such possession is $250; the penalty for possession of marijuana in this same enlighted town is $150.

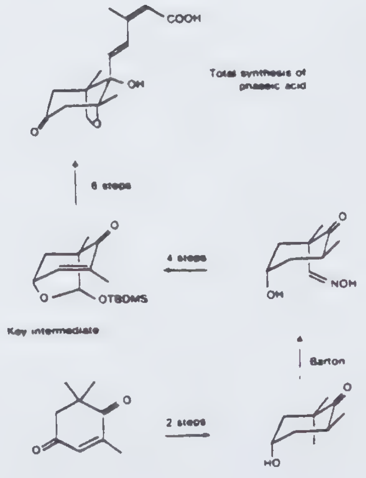
The defense rests.

More on Abscisic Acid Analogues

The following diagrams were inadvertently left out of the paper by Suzanne Abrams, MCIC, that appeared on pages 15 to 17 of the July/August issue. They have been reproduced here at the request of the author.

Figure 1
Abscisic Acid and Analogs





I -(e)

ENVIRONMENTAL CONCERNS

Emulating methods for reusing beer bottles could serve as a model for like material containers.

GLASS JARS used for many foods could be returned for refilling via cardboard boxes (now scrapped by the truckload) they came in. The jars are in excellent condition. Those now recycled require precious fuel to simply remake them!

PLASTIC CONTAINERS used for vinegar, cider and cleaning fluids etc could be similarly reused many times.

PLASTIC BAGS used to hold groceries could be easily returned in one's pocket on the next store visit and reused several times. (Keep the ads off them.)

EGG CARTONS light to carry, could be collected at homes, placed in a plastic bag and, when full, returned to the store for reuse.

Material which cannot be readily recycled such as magazines, telephone books, printers trimmings, office waste paper, cardboard, unreusable plastic bags and containers could be placed in marked garbage bags. These could then be suitably fragmantized, moistened, baled and via farm spreaders distributed on preploughed fields to act as mulch thus conditioning soils for better crop yields.

NEWSPAPER COMPANIES could help save trees by publishing sparsely read daily classification section on a weekly basis.

E.T.W. Bailey P. Eng.
176 Sterling Street,
Hamilton, Ont. L8S 4J8

416 522 3902

January 25, 1990

Sent to Mr. James Bradley, Minister of Environment Ontario

This copy for Mr. R.J. Whynott, Thought you might be interested.

[illegible] Bailey

I-(f)

SPEND IT BETTER

Cloth diapers come out on to

Modern-style cloth diapers (yes, there are such things) do away with folding and pinning and add all the advantages of a contoured fit. Better yet, they reduce pollution.

The environmental watchdog group Pollution Probe reports that disposable diapers account for 200,000 tonnes of waste a year in Canada. Bill Andrews, executive director of the West Coast Environmental Law Association in Vancouver, says that bleached paper products such as diapers may contain traces of dangerous chemicals including dioxins and other organochlorines. Recently public concern has been raised over exposure to these chemicals.

Now, some parents who wanted an alternative to disposables and old-fashioned pin-and-fold flat diapers have come up with convenient modern cloth diapers. Clothes designer Jenny Gilles of Richmond, B.C., designed a contoured cotton, Velcro-fastened diaper. It has eight layers of thin flannelette sandwiched down the middle for maximum absorbency without causing bunching around the legs. A flannelette liner can fit inside for extra night protection. Her diapers were so popular with other new mothers that Gilles and friend Cathy Trojanoski formed Babykins Products Canada Ltd. to make and sell the diapers and related accessories to the public. Stores across Canada now carry the line.

In Burnaby, B.C., environment-conscious Calvin Cosens was diapering his baby in traditional cloth diapers when he pricked himself, then his son, with the pins. "This is really barbaric," he declared. So he and his wife, Annette, came up with a gathered cloth, Velcro-fastened diaper that their company, Worldwide Baby Basics Inc., now sells as the Indisposable Cotton Diaper. The Indisposable has a rayon-filled centre for absorbency and and can be fitted with a nighttime liner. Baby Basics products, including diaper bags, nursing pads and diaper pails, are sold by home demonstration or by mail order.

Trojanoski at Babykins says new parents are more receptive to cloth diapers now because they are concerned about the environment and because most have washers and dryers. However, for those who don't want to bother with laundering but wish to avoid disposables, commercial diaper services may be the answer.

When Deborah Summerfield of Toronto heard that the diaper service she used was shutting down operations last summer, she decided to start her own operation with partner Robin Murray. Their Comfy Cotton Diaper Service is now breaking even, and they're fielding inquiries about franchises. Babies go through about 80 diapers a week and her weekly fee is $15, she says. Comfy Cotton uses traditional flat diapers but sells Japanese-made Nikky waterproof covers with Velcro fasteners to hold the diapers in place.

Modernized cloth diapers have even made an impact in government offices. Environmentalist Bruce Knapp convinced Peterborough, Ont., city council to call for provincial studies on the effect of used disposables on groundwater contamination, and if necessary, to ban their sale and use in the province. He gave samples of the new-style cloth diaper to each of the councillors as well as to Peterborough MPP Peter Adams. "I think they're wonderful," says Knapp.

Trojanosky at Babykins says cloth diapers are a bargain, just as in the old days. She estimates that, over two years, the cost of two dozen contoured diapers, liners, waterproof pants and hot water and soap add up to $400. This amount is more than the $250 for the same package of conventional flat cloth diapers but much less than disposables, which, at an average of $15 a week, will cost $1,560 over two years.

Babykins products, including machine-washable waterproof nylon pants, are sold in The Bay stores across Canada, at Simpsons and Toys "R" Us in Ontario; Woodward's stores in Alberta and B.C.; and in children's boutiques throughout the country.

A package of 12 Babykins diapers retails at $69.95; three liners are $8.95 and three waterproof pants cost $9.95. Babykins diapers are size adjustable (newborn to age two) and come with a two-year guarantee. Anyone who can't find the product in local stores can write to: Babykins Products, 12220 Vickers Way, Unit 120, Richmond, B.C. V6V 1H9 for a list of retail outlets.

Indisposable Cotton Diapers cost $64.80 a dozen; nighttime inserts are $30 a dozen and nylon pants are $4.95 each. Extra-large sizes cost a bit more. For a mail order form or to find a home sales representative for Baby Basics' Indisposables, call Marianne Pearson at (604) 261-2137 or write to her at 491 Pacific Blvd., Vancouver V6B 5G6.

The number for Comfy Cotton Diaper Service is (416) 881-2331 in Thornhill, Ont. For other diaper services look in the yellow pages.

—Rosemary Eng

CHRIST AMPBELL

FEB 1989, CANADIAN LIVING

I-(9)

THE REGIONAL MUNICIPALITY OF HAMILTON-WENTWORTH

Department of Engineering
71 Main Street West, Hamilton, Ont. L8N 3T4
Tel. (416) 546-4170
Fax (416) 526-6665

Refer to File No. E309-20
Attention of V. Terluk
Your file No.

March 1, 1990

Councillor J. Prentice, Chairman
Chairman's Advisory Committee on Environmental Issues

Amity Donation Centres

Dear Councillor Prentice:

On February 7, 1990 Councillor Terry Cooke along with Mr. Dan Vyce, Real Estate Department, and Val Terluk, Regional Solid Waste Management Section, met with Amity-Goodwill Industry officials to discuss the future of Amity's attended donation centres.

Amity officials also indicated that they are experiencing a significant decline in contributions because the donation centres on high profile commercial centres are becoming more scarce. Amity depends significantly on these strategic, high visibility locations for their donation centres to achieve maximum collection quotas. The difficulties which Amity is experiencing ultimately impacts negatively on employment programs offered to the disabled.

In the recent past Amity has lost approximately 20% of its donation centre placement locations. The loss in donation centres is reflected in a commensurate reduction of donated goods. As a result Amity is experiencing difficulties and is unable to process sufficient goods to maintain a level of stability in its employment programs for the disabled.

In view of the fact that Amity provides viable opportunities to serve the needs of the disabled as well as provide affordable goods for the needy, it is essential that their activities be supported and allowed to propogate. Correspondence from Mr. Doug Wallace, President of Amity describing the quantities which they help to recycle and keep out of the Regional landfill site, is appended for your review.

Cont'd...

Amity Donation Centres

Cont'd...

In this respect Amity officials are requesting the Region and the area municipalities to assist them in finding appropriate locations for their "attended donation centres". It was suggested by Councillor Cooke that vacant area municipality owned properties might be leased to Amity at a nominal charge, or alternatively that we assist Amity to secure long-term locations in commercial plazas.

We believe that this particular issue would be addressed most effectively through your Committee and we are therefore referring it to you for your consideration and possible support.

John Lumsday

Rob

E.M. Gill, P. Eng.
Acting Commission of Engineering

VT/md
Attach.

amity
GOODWILL INDUSTRIES
225 KING WILLIAM STREET, HAMILTON, ONTARIO L8R 1B1
TELEPHONE 526-8481

FILE NO.
LETTER NO.
FEB 1

ENG. PLAN
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ANS. BY
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DOUGLAS S. WALLACE
PRESIDENT & EXECUTIVE DIRECTOR

February 8, 1989

Mr. G. S. Spencer, P.Eng.
Commissioner of Engineering
The Regional Municipality of
Hamilton/Wentworth
71 Main Street West
Hamilton, Ontario
L8N 3T4

Dear Mr. Spencer:

Your memorandum to us concerning the solid waste survey warrants some comment from us.

In the course of our activities we are currently collecting some 3,250,000 lbs. of clothing annually. All of it is recycled. Much of the clothing is made of synthetics and is not biogradable. We are diverting 1,625 tons of clothing annually from regional landfill sites.

In addition we estimate that we are collecting another four million pounds annually of furniture, appliances and other household items. Most of this is either processed for resale or sold for recycling.

Our figures suggest that for each ton of goods we bring to the solid waste transfer station there are more than three tons of goods which we have effectively recycled into other uses. We have alleviated the Municipal Government of the need to collect over 7,250,000 lbs of goods from the curbside this past year, and have diverted 5,600,000 lbs of refuse away from the regional landfill site.

We feel that in our own way we have been making a significant contribution in the area of recycling goods as well as providing disabled people an opportunity to move ahead in life. A further benefit, of course, is that many people on limited incomes are able to acquire usable clothing and household goods within their budget. We trust that this information will be of some interest and encouragement to you.

Sincerely yours,

Doug Wallace, President
and Executive Director

DSW:js

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Hamilton Public Library
Urban Municipal Collection, 2nd Floor
55 York Boulevard
Hamilton, Ontario
L8R 3K1 (PI)

APR 12

CHAIRMAN'S ADVISORY COMMITTEE ON ENVIRONMENTAL ISSUES

AGENDA

DATE AND TIME:	Thursday, April 12, 1990 8:30 a.m.
PLACE:	Committee Room, 15th Floor Regional Offices

---

1. **GENERAL**

   a) **Declaration of Interest** re: Municipal Conflict of Interest Act
   b) **Minutes of Chairman's Advisory Committee on Environmental Issues Committee Meeting - March 9, 1990**
   c) **Delegations:**

      c.1 Mr. Glenn Parker, Ms. Jacqui d'Eon and Dennis Darby representing Procter & Gamble Inc. - regarding Disposable Diapers.

      c.2 Brenda Poland - Developing and Sustaining a Health Community.

2. **NEW BUSINESS**

2.1 **Educational Tours on Environmental Interest**

Councillor B. Hinkley to discuss this item.

2.2 **Letter form Rashne N. Baetz**

Regarding the following subject:

i) Energy Conservation, lights left on in office towers. How can we change this?

ii) Closed and abandoned Landfill sites.

2.3 **Review Terms of Reference** I

2.4 **Letter from D. J. Robinson on Behalf of Greensville against Serious Pollution regarding all operations at the Steetley Landfill Site**

2.5 **Letter from Alderman T. Murray regarding the Use of Styrofoam Cups by the Regional Health Department on Upper Wentworth Street**

3. FOR THE INFORMATION OF THE COMMITTEE

   a) Cigarette Smoking.
   b) Balloon Man of Canada - Regarding the release of balloons.
   c) Tire fire offers Environmental Lesson.
   d) Region Wrestling with By-Law to Protect Ozone.

4. **ADJOURNMENT**

1.(b)

MINUTES OF THE CHAIRMAN'S ADVISORY COMMITTI ON ENVIRONMENTAL ISSUES

The Chairman Advisory Committee on Environmental Issues met at 8:30 a.m. on Friday, March 9, 1990, in the Committee Room, 15th Floor, Ellen Fairclough Building, Hamilton.

Present:	Chairman (Councillor) J. Prentice Councillor B. Hinkley Brian McHattie, William Pedder, Prof. Keith Murphy, C. Katz
Also Present:	Councillor T. Cooke Ian Reid, Val Terluk, Norman Ragetlie, Ken Anderson, Ted Gill, Representing Amity - D. Wallace, T. Horne, P. McDonald, Conserver Society - Wm. Randall, Intermetco - L. A. (Barry) Thompson

1. GENERAL

a) **Declaration of Interest** re: Municipal Conflict of Interest Act (NONE)

b) **Minutes of Chairman's Advisory Committee on Environmental Issues Committee Meeting - February 9, 1990**
(McHattie/Katz)
Be received and adopted as amended.

c) **Business arising out of the Minutes**

Councillor Hinkley asked where this committee stands in connection with the Environmental Conference 1990. Mr. Gill advised that he has had discussion with Mr. Thoms with respect to the two committees combining their efforts and holding one conference. Councillor Hinkley expressed his concerns that he did not want this committee taking a back seat.

Mr. Gill indicated that a report may be available for our next meeting.

A copy of the terms of reference for sustainable development are attached.

Information Item 3(g) was moved forward on the Agenda.

Amity Donation Centres

Councillor Cooke introducted the representatives from Amity. One of the concerns expressed was the fact that the Amity Trailers are not well received in Malls as on occasions items which should be going directly to transfer stations are being dropped off at the trailers. The members were advised that when this happens, the unwanted goods are normally removed within hours as Amity trucks are radio dispatched. The trailer also takes up valuable parking spaces in the Malls. Alternative areas mentioned for the trailers are new industrial developments and at the transfer stations. Mr. Wallace indicated that the figures listed in their letter on the amount of clothing and goods delivered to the trailers could be doubled if you include all agencies doing this type of work.

Councillor Cooke suggested that we should be promoting the use of these trailers in local malls, transfer stations, along with the Parking Authority, and the Planning Department with respect to site plans, as without these trailer locations the amount of goods received both Amity and their employment of the disabled would suffer.

Mr. Terluk advised that he had discussions with Tricil and they appear to be receptive.

The Committee was told that any clothing not sold in Hamilton ends up in Toronto or overseas to Third World Countries. Some material is turned into rags. Councillor Hinkley said that when the landfill sites were closed, some of the general public thought that to go to a transfer station would cost them money so they elected to use the Amity locations as dumping station. This does not appear to be a problem any longer.

Councillor Hinkley would like to see more Amity trailer locations in Hamilton. The Committee was advised that there are 10 location at the present time.

The following motion was carried.
(Murphy/Hinkley)

That the Amity Goodwill Industries continue to negotiate with departments throughout the Regional Municipality of Hamilton-Wentworth and the Corporation of the City of Hamilton as well as other agencies for the placement on Amity Trailers on their properties.

Councillor Cooke suggested that the Region could place advertising in the Solid Waste flyer. He also indicated that if Tricil was agreeable that an Amity trailer site at one of their locations could be tried on a trial basis. Mr. Katz suggested that any malls that allowed Amity trailers may be able to benefit from some advertising related to Amity.

d) The Bruce Trail Association - Mr. Ian Reid

Councillor Prentice advised the members that he had made a presentation at the Freeway Committee Meeting on behalf of the Bruce Trail Association. He suggested a change to a proposed Clover Leaf in the vicinity of the existing Bruce Trail but advised that he was unsuccessful with that option.
The outcome of his presentation resulted in the following review:

That staff investigate the following options and bring a report back to the Committee:

1) pedestrian overpass in conjunction with the Hydro access;

2) a pedestrian underpass located immediately north of the Escarpment crossing;

3) provision of pedestrian access adjacent to the roadway extending north to the proposed access to King's Forest Park in the vicinity of Mt. Albion Road.

Both Prof. Murphy and Councillor Prentice preferred a pedestrian overpass at the existing trail location.

Mr. Reid indicated if the pedestrian overpass at the existing trail location was not successful than option 2 above would be his choice. Mr. Gill advised that the 800 to 900 metre northerly access would allow the hikers to walk along the Freeway right of way to the point of crossing.

The following motion was carried.
(McHattie/Murphy)

That the Chairman of this Committee write the Ministry of Municipal Affairs and invite a representative to attend our next meeting.

2.1 By-Law on Chlorofluorocarbons, Report LS-90-14

Mr. Anderson advised the Committee on why his department came up with the following recommendations.

a) That the Commissioner of Legal Services not prepare a Regional By-Law on chlorofluorocarbons.

b) That the Council of the Regional Municipality of Hamilton-Wentworth request the Ministry of the Environment to actively and aggressively pursue initiation, implementation, monitoring and enforcement of strong legislation and regulations which address issues of the making, use, transfer, display, transportation, storage, recycling and disposal of CFC's.

Mr. Taplay indicated that if the existing trade By-Law was combined with the Toronto By-Law, that a combination of the two By-Law's would then be something that could be enforceable.

Mr. Taplay indicated that there are two cities in the United States that have taken action on the release of CFC's. Mr. McHattie suggested that Mr. Anderson review the Trades By-Law in combination with the Toronto By-Law to try and come up with a satisfactory By-Law with some clout. Mr. Anderson advised the members that he will review the two By-Law's to see if an acceptable By-Law can be prepared.

Mr. McHattie asked if there are recovery systems available now. Prof. Murphy advised that Mohawk College and Dofasco have recovery systems. The members were advised that Germany has a recovery system in place for all refrigeration units, and all mechanics must be trained in the recovery of CFC's.

(McHattie/ Pedder)

That this item was Tabled so that the Commissioner of Legal Services could review the By-Laws.

2.2 Education Tours on Environmental Interest

(Pedder/McHattie)

Tabled as Councillor Hinkley had another commitment and requested the tabling.

3. FOR THE INFORMATION OF THE COMMITTEE

(Pedder/Murphy)

That the following items be received for information.

a) Acceptance of household hazardous waste at Regional Transfer Stations.
b) Bell launches innovative recycling initiatives.
c) Waste Disposal - Disposable Diapers.
d) Degradable Plastics - Fact or Myth?
e) Glass jars, plastic containers, plastic bags, egg cartons, etc.
f) Cloth Diapers come out on top.

4. OTHER BUSINESS

Mr. Pedder indicated that scrap yards are discharging oil and other contaminates on to the ground on a daily basis. Mr. Ragetlie indicated that the MISA program will be reviewing all sites as to what is going into the ground and into the sewers.

Mr. McHattie would like to see this Committee advertised more, as this Committee deals with serious subjects.

5. NEW BUSINESS

N.B. #1 Letter for Canadian Tire Recycling Council.

N.B. #2 Information Sheet - Steel Food and Beverage Can Recycling.

N.B. #3 Letter from J. Taplay on the comparison of the Tire Fire and the depletion of the ozone shield.

On Motion (Pedder/McHattie) the meeting **ADJOURNED** at 11:00 a.m.

CARRIED

Chairman

John L Ramsay

Secretary

PROCTER & GAMBLE INC.

Post Office Box 355, Station "A", Toronto, Ontario, Canada M5W 1C5 Telephone (416) 730-4711 Fax (416)

C.1

PROCTER & GAMBLE, INC.

presentation to

CHAIRMAN'S ADVISORY COMMITTEE ON ENVIRONMENTAL ISSUES

HAMILTON/WENTWORTH

THURSDAY, APRIL 12, 1990 -- 8:30 AM

In the past year, the environmental issues surrounding disposable diapers have continued to intensify and to garner widespread public and government interest. Procter & Gamble, Inc., the leading Canadian manufacturer of disposable diapers, recognizes the importance of this growing concern.

Procter & Gamble is committed to minimizing the impact of its diapers -- and of all its products, packaging and manufacturing -- on the environment. Similarly, Procter & Gamble is committed to providing factual information so that consumers, legislators and other interested parties may make informed judgments.

Procter & Gamble has been a proactive participant in government, industry and consumer dialogue on a wide variety of environmental issues. Accordingly, P & G appreciates the opportunity to meet with the Chairman's Advisory Committee on Environmental Issues to discuss the facts surrounding the manufacture and use of disposable diapers, as well as the company's perspective and thoughts concerning their disposal.

Representing Procter & Gamble at the Committee meeting will be:

Mr. Glenn Parker
Section Manager
Corporate Professional and Regulatory Services

Ms. Jacqui d'Eon
Manager
Consumer and Educational Services

Mr. Dennis Darby
Technical Manager -- Environment
Paper Product Development

We look forward to an informative and mutually-beneficial dialogue.

Printed on recycled paper

J Ramsay

Cohn & Wolfe
80 BLOOR STREET WEST, SUITE 1400, TORONTO, ONTARIO M5S 2V1
(416) 924-5700 / FAX: (416) 924-6606

March 23, 1990

Mr. Val Terluk
Solid Waste Operations Supervisor
119 King Street West
Hamilton, Ontario
L8N 3V9

Dear Val:

Many thanks for your efforts in arranging for Procter & Gamble to present to the Chairman's Advisory Committee on Environmental Issues. We're looking forward to meeting with the Committee at 8:30 a.m. on April 12.

As you requested, I'm enclosing a one-page revision of the letter that we sent to you. It lists the names and titles of the P & G representatives that will be present and offers a general outline of what they would like to cover during the session. We will bring a detailed outline for the Committee on the 12th.

Thank you for forwarding the list of committee members. I received the fax this afternoon. As we discussed, I have also notified several others to whom we had sent letters with the hope that they may be able to attend: Mr. Ron Barker, Dr. Fran Scott, Mr. MacMillan Carson, and Mayor Morrow.

Procter & Gamble will prepare for approximately one-hour with the Committee. We will, however, be happy to remain as long as is required to review the issues to everyone's satisfaction. I will let you know if we will be bringing any audio/visual speaker support materials.

I'm sure we'll speak again prior to the meeting. In the meantime, if I can answer any questions, please phone.

Again, thank you for facilitating this meeting. Procter & Gamble is delighted to have the opportunity to meet with the Committee.

Cordially,

Wendy J. Mayer

Wendy J. Mayer
Senior Counsellor

enclosure

cc: Mr. Jack Ramsay

Health Priorities Analysis Unit

25 Main Street West, 2nd Floor
P.O. Box 897
Hamilton, Ontario L8N 3P6
Tel.: (416) 572-7970

1c.2

April 4, 1990

John Prentice
Environmental Advisory Committee
30 Dunning Court
Dundas, ON
L9H 4K6

Dear Mr. Prentice:

We are delighted that you accepted our invitation to participate in the "Forum on Developing and Sustaining a Healthy Community" (see attached flyer). The Forum is being held in response to the increasing awareness of the concept of healthy communities in Hamilton-Wentworth.

Your involvement in the Forum is scheduled to be in the Community Coalition Poster Session from 2:30 to 3:30 pm. Please see attached outline of Forum proceedings.

Please find enclosed a Participant's Biography form which we ask you to complete and return to us as soon as possible.

Thank you for your interest in participating in the Forum on Developing and Sustaining a Healthy Community. If you have any questions, please feel free to contact me at 521-4807 or Brenda Poland, Administrative Assistant to the Forum, at 572-7970.

Yours truly,

Brenda Poland
for

Larry W. Chambers PhD
Chairman, Secretariat to the Forum
and
Director, Health Priorities Analysis Unit

cc: Brenda Poland

Encl.

A project supported by the
Educational Centre for Aging and Health,
Faculty of Health Sciences,
McMaster University

The Population Health Group
is pleased to announce
a Forum on

DEVELOPING AND SUSTAINING A HEALTHY COMMUNITY

to be held

Wednesday May 2, 1990
1:30 - 9:00 p.m.

Royal Botanical Gardens
680 Plains Road West

➡ ***Highlights***

- relationship between sustainable development and healthy communities
- current community actions promoting sustainable development and healthy communities
- future action and cooperation

Details to Follow Soon

For more information, contact:

Brenda Poland
Health Priorities Analysis Unit
McMaster University
(416) 572-7970

Poster Session Participant's Biography

Forum on Developing and Sustaining a Healthy Community

Wednesday, May 2, 1990

Please take a few minutes to answer the following questions. This information will allow us to organize our Forum more effectively, and give you your correct credits in our final conference program.

1. Name of group: ____________________

2. Address: ____________________

____

3. Name of representative: ____________________

4. Position in group: ____________________

5. Home address and phone number of representative: ____________________

____

6. Work address and phone number of representative: ____________________

____

Some groups may choose to have more than one representative at the Poster Session. If this is so with your group, please list below the other representative(s) and their phone numbers.

1. ____________________ # __________

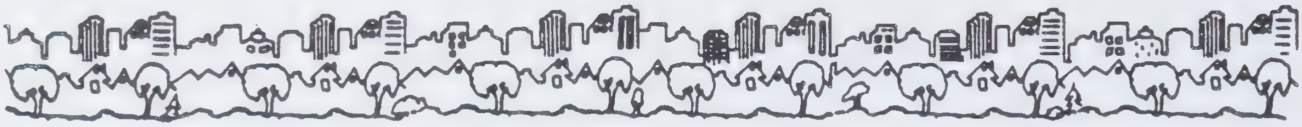
2. ____________________ # __________

3. ____________________ # __________

Please attach a list of the members of your group, including their addresses and phone numbers.

Thank you for your cooperation in completing this form. Please return this form to:

Brenda Poland
Administrative Assistant
Health Priorities Analysis Unit
25 Main Street West, 2nd Floor
Hamilton, Ontario L8N 3P6



Plans for the Forum on Developing and Sustaining a Healthy Community

In May 1989, a one-day workshop entitled "Health for Hamilton by the Year 2000" was held at McMaster University. Approximately 100 people attended the workshop which was organized by the Students International Health Committee and the District Health Council.

In many ways, the May 1990 Forum is a follow-up to last year's event. The Population Health Group, consisting of 38 people from various health care backgrounds, as well as the Faculty of Health Sciences, McMaster University, has felt there has been an increasing awareness in Hamilton-Wentworth of the concepts of sustainable development and healthy communities. They have decided to explore these concepts further in the format of a forum.

The objectives of this Forum are as follows:

- explore the relationship between sustainable development and healthy communities
- review present Hamilton-Wentworth community and university actions to promote sustainable development and healthy communities
- help increase awareness of overlapping objectives of current community coalitions
- develop approaches for future action and cooperation

This "healthy community" Forum will be held on Wednesday, May 2, 1990 from 1:30 p.m. to 9:00 p.m. at the Royal Botanical Gardens Centre, 680 Plains Road West, Burlington.

The Forum will commence with a talk by Dr. Fraser Mustard, entitled, "Prosperity, Quality of Life and Health." Next on the agenda, there will be a Community Coalition Poster Session which will describe present community actions in regards to healthy communities. The delegates will then form discussion groups of 10 to discuss issues arising from Dr. Mustard's presentation and activities of the groups participating in the poster session. After dinner, the workshops will briefly present their conclusions to the whole gathering. Four members of a panel will comment on the reports and conclude the day's activities with a 5-10 minute comment on healthy communities and sustainable development from their perspective. The panel discussion will represent the viewpoint of regional government, environmental concerns, social services and education.

While the Forum was initiated by the Population Health group, its success is very dependent on community participation. In light of the objective to review present actions promoting sustainable development and healthy communities, a "Community Coalition Poster Session" is being incorporated into the day's agenda. In Hamilton-Wentworth, there are committees, councils and task forces which have brought people together from various backgrounds to tackle issues corresponding to the concepts of sustainable development and healthy communities. The areas of interest being examined by these groups includes issues such as affordable housing, nutrition, drug and alcohol addiction, water quality.

Considering that many of the groups participating in the Poster Session do not have elaborate display materials, the format will be quite simple. Each group will present on one sheet of paper on a flip chart, their title, two to three objectives, and a few highlights of their work (to be prepared beforehand). At least one representative per group will be asked to be on hand to discuss their group's involvement in the healthy community concept. (The registration fee will be waived for this individual.) It is the serious expectation of the Forum organizers that all participants of each session plan to attend and be involved in the entire Forum.

While some groups may have print material to hand out, others will not. There will be one table, centrally located, for additional hand-outs from all the groups.

The 200 delegates will receive a list of names and addresses of the 15-20 participating "coalitions" (and their members) as part of their information package. In the space of approximately one hour in the afternoon, the delegates will be able to visit within the Display Area at RBG to explore the groups of their choice.

OPEN FORUM ON

DEVELOPING AND SUSTAINING A HEALTHY COMMUNITY

Wednesday May 2, 1990
1:30 - 9:00 p.m.
Royal Botanical Gardens
680 Plains Road West

Since the May, 1989 "Health for Hamilton by the Year 2000" Day, Hamilton-Wentworth has followed this lead by promoting sustainable development and healthy communities. This *Forum* will:

- explore the relationship between sustainable development and healthy communities
- review present Hamilton-Wentworth community and university actions to promote sustainable development and healthy communities
- help increase awareness of overlapping objectives of current community coalitions
- develop approaches for future action and cooperation

Highlights

● **Plenary Session** *"Prosperity, Quality of Life and Health"*

Dr. Fraser Mustard
President, Canadian Institute for Advanced Research and Professor Emeritus,
Faculty of Health Sciences, McMaster University

● **Community Coalition Poster Session**

- Industry-Education Council
- Central Area Plan Implementation Committee (CAPIC)
- Hamilton-Wentworth Drug and Alcohol Awareness Committee
- Environmental Advisory Committee
- Working Group on Co-ordination of Services for the Elderly in Hamilton-Wentworth
- Sustainable Development Task Force
- *... and Others*
- Hamilton Harbour Remedial Action Plan (RAP)
- AIDS Task Force
- Inter-Agency Council on Smoking
- Community Street Youth Task Force
- Skills Training Advisory Committee (STAC)
- The Prevention Network
- Hamilton-Wentworth Nutrition Committee
- Social Planning and Research Council
- District Health Council

● **Small Group Workshops on Forum Objectives**

● **Group Reports and Panel Discussion**

With participants representing the interests of:

- Universities
- Environment
- Business Development
- Regional Government

Space is limited to 200 persons. Pre-registration only, prior to April 23, 1990. The fee is $15.00 with a buffet dinner, or $5.00 for registration only. Please make your cheque or money order payable to McMaster University and mail it together with the registration form below to:

Health Priorities Analysis Unit, McMaster University, 25 Main Street W., 2nd Floor, Hamilton, ON L8N 3P6 (572-7970).

REGISTRATION FORM
(Deadline April 23, 1990)
Please use a separate form for each registration (photocopies acceptable)

Name: Given Name Surname
Title:
Agency:
Address:

City: Province Postal Code
Telephone:

☐ $15.00 Enclosed for Registration and Dinner.
☐ $ 5.00 Enclosed for Registration Only.

GREATER HAMI
REGIONAL MUNICIPALITY OF HAMILTON-W

2.1

January 22, 1990

MEMORANDUM

TO: Councillor Hinkley

FROM: J. Fardell

RE: Educational Tours on Environmental Interest

With the growing amount of concern and interest in the world with regard to the environment and its condition, the interest and concern has grown into the academic issues and solutions that the human race must consider.

When we last spoke, we discussed the advanced programs and initiatives that the Region of Hamilton-Wentworth has established with respect to environment issues and controls. With this, the Region has an opportunity to provide not only to our local academic institutes and industrial interests but possibly international interests, the possibility of educational tours and seminars to be provided by local environmental control initiatives and other related industries.

The educational tour segments of student travel is a market which has been around for a long time. The academic curriculum is the key to establishing the need and interest of the student. An example would be that of history where students and teachers would examine their subject with field trips and possible investigation of historic value. The environmental issue is one such tour or segment which could be tapped into within our Region.

The purpose for writing this memo to you as a member of the Environmental Advisory Committee is to possibly discuss the possibility of establishing a program through a source who is familiar in this field.

Once the program and studies have been established, our department can market this program. We feel this is a great opportunity for Greater Hamilton to show how advanced we are in this field and also to establish ourselves as a model to be studied.

JF/pae

Jan 2.2

Conserver Society
of Hamilton and District Inc.

March 26, 1990

Mr Jack Ramsay
Chairman's Advisory Committee
on Environmental Issues,
Dept. of Engineering, Hamilton

Please include the following items in the agenda for the next meeting of the Committee.

Thanks
Rashmi N. Bentz

---

1. A citizen of Hamilton has alerted me to the fact that many office towers in downtown Hamilton leave their lights on well into the night. Considering Ontario Hydro is stressing energy conservation what is the explanation for this? what can we do to change this practice?

A registered charitable organization. 155 James Street South, Suite 601, Hamilton, Ontario L8P 3A4

-2/3

2. CLOSED LANDFILLS

Conserver Society
of Hamilton and District Inc.

Spectator - March 15, 1990

Fears raised about dump[illegible]king legacy

'Who knows what's in there? As a citizen, I'm concerned.'

By BETH MARLIN
The Spectator

A WESTDALE environmentalist has unearthed new concerns about industrial waste buried at a former garbage dump bordering Chedoke Creek.

John Milton recently posted flyers throughout his west Hamilton neighborhood which raise concerns about potentially contaminated leachate flowing into the creek from the former dump site, which is now Kay Drage Park.

"Who knows what's in there?" Mr. Milton asked in a recent interview. "As a citizen of the area, I'm concerned."

Mr. Milton voiced his concerns at a recent meeting with the region's acting engineering commissioner Ted Gill and Hamilton Councillor Mary Kiss, prompting a public review of previously unreleased 1988 and 1989 test results.

The report will be presented to the region's engineering services committee by the end of April, said Mr. Gill, who has not yet reviewed the findings.

The park, which is bordered by King Street West, Highway 403 and Chedoke Creek, housed a 14-hectare (35-acre) landfill site from the early 1950s until 1974.

No records were kept of material dumped at the site, which was licensed to take 55 per cent household, 35 per cent commercial and 10 per cent industrial waste, Mr. Milton said.

For the past eight years, most of the land has been used as a park and the rest is now owned by the Roman Catholic Diocese of Hamilton.

Environmental concerns about the former dump, which has no system to collect an estimated 44 million litres (10 million gallons) of rain and groundwater percolating through the decomposing waste, have been raised before.

In 1987, allegations surfaced that hundreds of barrels of industrial waste oil had been dumped there during the 1960s after a city parks worker noticed a burning sensation when handling black sludge oozing from the ground. Youngsters playing soccer there also complained of burning feet and headaches.

At the time, council was told that regional tests turned up nothing to explain the complaints and no evidence that any hazardous waste had been buried there.

However, provincial documents obtained by Mr. Milton under the Freedom of Information Act reveal that one 1987 test did find heavy petroleum oils — possibly chlorinated rolling oils and petroleum tar — at the site.

"Both oils would cause hand irritation," states the document.

Environment ministry official John Vogt said the region's 1987 leachate tests show no measurable change in the quality of water before and after Chedoke Creek flows past Kay Drage Park.

"The Chedoke Creek is in such poor condition (from combined sewer overflows) that any effect from the leachate is negligible in comparison," Mr. Vogt said.

He said it may become easier to measure the effect of any leachate from the site after a retaining basin is installed next year over the combined sewer overflow near Royal Avenue.

Ms Kiss questions why the 1988 and 1989 results were never presented to council.

"We have a right to know what the results indicated. I want to be sure it is clear of methane and chlorinated organics and PCBs."

Ms Kiss said she will push regional council to install a collection system to prevent leachate from the former dump entering the creek.

The Roman Catholic Diocese of Hamilton, which acquired about one-quarter of the site from the city, is also interested in the test results, said administrator Jim Sherlock.

A registered charitable organization. 155 James Street South, Suite 601, Hamilton, Ontario L8P 3A4

Conserver Society
of Hamilton and District Inc.

2. CLOSED LANDFILLS / ABANDONED LANDFILLS ...

The attached article "Fears raised about dump's leaking legacy" raises the issue of what the Region is doing with respect to closed and abandoned landfill sites in the Region.

① Have closed / abandoned landfill sites been identified and catalogued?

② What is being done to evaluate the environmental impact of these sites? - especially in terms of leachate sampling and analysis [Leachate is the contaminated liquid resulting from water percolating through the waste].

2.3

CHAIRMAN'S ADVISORY COMMITTEE
ON ENVIRONMENTAL ISSUES

TERMS OF REFERENCE

The Advisory Committee has the mandate to enquire into and to report, through the Engineering Services Committee, on matters relating to:

1. Solid Waste

    a) Policies and procedures for the effective management of solid waste

    b) New technologies, policies and ventures, and strategic distribution of the waste stream for:

        i) waste reduction
        ii) Glanbrook Landfill Site and Transfer Stations
        iii) S.W.A.R.U. energy from waste facility

    c) Recycling opportunities

    d) Planning and development of a process for the disposal of contaminated materials

2. Hamilton Harbour Remedial Action Plan

    a) Review and comment on recommendations related to the rehabilitation of the Hamilton Harbour

    b) To act as the Region's liaison with the Hamilton Harbour Remedial Action Plan Stakeholders Group

3. Municipal Industrial Strategy for Abatement (MISA)

    Monitor, review and report on matters relating to Provincial legislation governing MISA.

4. Natural Areas

    Assist, review and comment on environmental matters relating to Natural Areas.

5. Public Education/Information

    To provide a forum for members of the public to become aware of and share in matters relating to the environment.

RECEIV

2.4

GASP
(Greensville Against Serious Pollution)
c/o 659 Harvest Road
Greensville, Ontario, L9H 5K5
March 20 1990

Regional Municipality of
Hamilton-Wentworth
71 Main Street West
HAMILTON, Ontario, L8N 3T4

ATTENTION: Mr Reg Whynott, Regional Chairman

Dear Mr Whynott,

We have recently learned of the advisory committee on environmental issues which was established under your direction. Have the environmental issues of great concern to our community been discussed by this committee? These concerns are air pollution resulting from incineration of industrial waste materials proposed by Steetley Quarry Products Inc. and groundwater contamination resulting from both present and future landfilling by this same company.

Our first major concern is the proposal by Steetley to incinerate various waste materials (tires, industrial solvents, and shredder waste) in their lime kilns. Have the committee studied air quality in the Hamilton-Wentworth region? Has the committee assessed the impact of any additional air pollution resulting from industrial expansion, and especially has the committee studied incineratiion as a method of waste disposal?

The second major concern that we have is the contamination of groundwater resulting from the present Steetley Brow Landfill and the proposed 200 acre Landfill proposed for their South Quarry on highway *5. Both these sites are situated in fractured limestone which makes the worst possible containment system for such use. The natural drainage flow goes directly into Lake Ontario via Cootes Paradise thus affecting not only local wells but the prime water supply for the region of Hamilton-Wentworth.

Aside from the major impacts that these activities will have on our immediate community, they will also have a major effect on the region of Hamilton-Wentworth.. We as a community would be very grateful if the advisory committee would examine these issues with earnest and so help us assess their impacts. In so doing the region would be assisting in the protection of the two most vital elements of our environment- the quality of air and water.

Yours sincerely,

Dave Robinson

D. J. Robinson (on behalf of GASP)

c.c. Mr. E.M. Gill, P. Eng. Acting Commissioner of Engineering
Mr. Val Terluk, Manager of Solid Waste Operations

THE REGIONAL MUNICIPALITY
OF HAMILTON - WENTWORTH

Office of the Chairman

March 20, 1990

Mr. D.J. Robinson
GASP
c/o 659 Harvest Road
Greensville, Ontario
L9H 5K5

Dear Mr. Robinson:

Thank you for your letter of March 20, 1990 regarding the areas of involvement of our Task Force on Environmental Issues and the many areas of concern which you list for their attention.

First, let me say that you have indeed covered a very wide spectrum of issues and I can't commit that the group will be actively involved in all of them but I am aware that they are certainly extremely busy. I should also point out that they are a dedicated group of volunteers who also have other pursuits of importance so they do not spend all of their time in this particular committee role.

On the application by Steetley I'm hopeful that you are aware that the Region is very actively monitoring this situation and will be expressing our opposition to certain aspects of their proposal. In addition, we are also providing support funding for the Town of Flamborough for their submission.

I am taking the liberty of forwarding your letter to Regional Councillor John Prentice who has accepted the responsibility to serve as Chairman of the Task Force on Environmental Issues and I'm sure he'll discuss your comments with the group.

Thank you for writing and expressing your concerns.

Yours very truly,

R.J. (Reg) Whynott
Regional Chairman

P.O. Box 910, Hamilton, Ontario L8N 3V9
119 King Street West, 15th Floor
Tel: (416) 546-4200 Fax: (416) 546-2340

2.5

CITY COUNCIL
HAMILTON, CANADA

Alderman Tom
Chairman – Parks &
Chairman - Copps Co
Police Commissioner

71 MAIN STREET WEST L8N 3T4 • (416) 546-2730 • RES. (416) 387-92

3 April 1990

Chairman's Advisory Committee
on Environmental Issues

Attention: Mr. Jack Ramsay, Secretary

Dear Sir:

I have received a telephone call from a concerned constituent regarding the use of styrofoam cups by the Region's Health Department, on Upper Wentworth Street.

It seems that although we are promoting environment-friendly products for use by the general public, we ourselves are not abiding by this practice.

I would appreciate if you would address this concern and advise me on what action you may be taking.

Thank you kindly in advance for your assistance in this regard. I look forward to hearing from you.

Yours very truly,

Tom Murray,
Alderman, Ward 8

/ck

cc: Mrs. Cathy Malcolmson
88 Rice Avenue
Hamilton, Ontario
L9C 5V9

RECEIVED MAR 2 3 1990

March 19, 1990 3 a

Dear Jack - Enclosed are a few items indicating my long-time interest and concern regarding what the U.S. EPA calls not a, but THE major source of indoor air pollution — namely, smoking cigarettes.

It's been a long time in gelling in the public mind that cigarette smoke is the outstanding pollutant and contaminant of the indoor environment where most people spend most of their time, but *this* is the year of gelling — and of intent to avoid it.

In my view, nothing provides a more focused FOCUS for cost-effective remedial action than the awareness that such action must *begin*, literally, right under our noses. If the operative words are truly AIR, AWARE, FAIR, SMOKE and CARE, then we are on track.

Looking forward to lending a helping hand.

Yours truly,

(over)

McMASTER UNIVERSITY
faculty of health sciences
ANATOMY AND EXPERIMENTAL MORPHOLOGY
1200 Main Street West, Hamilton, Ontario, Canada L8N 3Z5
Telephone: (416) 525-9140

George Lewis
265 Lewis Road, Winona
Box 113 L0R 2L0

643-3665

A Caring Project - 1990 SMOKE-FREE!

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NORMAN WEBSTER, Editor-in-chief
GEOFFREY STEVENS, Managing Editor IAN CARMAN, Executive Editor
FRIDAY, JANUARY 10, 1986

Quitting for charity

So, little more than a week into the New Year and your family has found you chewing the living room carpet — an emotional excess yielding much the same taste in the mouth as the cigaret craving that caused it. Worse, you may have fallen prey to the subversive thought processes that lurk treacherously at the back of every reforming smoker's mind, suggesting an inviting series of rationalizations for giving up the effort to quit.

Maybe, after all, the New Year's resolution is an unsuitable vehicle to carry as fragile a commodity as human resolve through the bumpy weeks of January — though there is some reason to believe that giving up cigarets works better if it is imbued with significance. Perhaps if it were in double harness with some other noble cause, it would stand a better chance.

George Lewis, who teaches anatomy at McMaster University and is probably the most implacable foe of smoking in all of Canada, likes the double harness approach — and he has one in mind. Although firmly convinced that quitting is the best gift anyone can give himself or his family, Prof. Lewis is quite willing to work in economic motivation and the appeal of other worthy causes.

Noting the ready, generous response of Canadians to appeals for aid to the hungry in Africa, it occurred to him that Canada's 7.4 million smokers, in the course of giving up the habit, might consider contributing the cost of one packet of cigarets a week to the cause of alleviating hunger. There is a potential here for about $17-million a week in aid, with substantial health benefits and reduced Canadian health costs into the bargain. Together, of course, with the reinforcing effect of an obligation to help the less fortunate.

This is, of course, pure fantasy. The very notion of all Canadian smokers quitting together makes far too much sense to be remotely plausible. Still, there is a tide in the affairs of men which, if taken at the flood, could lead to mass quitting. If you are in the market, and dates are still significant, National Non-Smoking Week runs from January 16 to 22.

of today's price!

- an annual $ 2,000.00 + 'habit'.

the average Canadian user - a pack and a half a day.

Missed boat on smoking

If environmental protection truly begins by protecting the environment, then the Peterson government in Ontario has missed the boat in its new workplace smoking legislation (Give Non-Smokers Room, New Law Tells Employers — July 27).

Today as never before it is clear that smoking is pollution and that indoor smoking especially is atmospheric vandalism. Shame on our Ontario legislators for not acting accordingly.

Their new law virtually endorses continued pollution and penalizes non-polluters. Moreover, it ignores the fact that restaurants, taverns and bingo halls are workplaces for their employees. Shame, shame, shame!

George F. Lewis
Winona, Ont.

■ SATURDAY, AUGUST 5, 1989

THE GLOBE AND MAIL

FRIDAY, AUGUST 4, 1989

Institute failed to acknowledge nicotine problem

The 30th Institute on Addiction Studies held recently on campus at McMaster is still apparently operating under false pretences. It failed once again to acknowledge, let alone address, the problem of nicotine addiction as Canada's most tenacious and devastating drug problem.

In his town meeting program last year on the legalization of drugs, Ted Koppel tried vainly to put the whole drug issue in perspective. He began by pointing out that cigarette use kills 350,000 Americans each year, a figure now adjusted upward to 390,000 by the U.S. Surgeon General. This catastrophic loss of life he contrasted with the 100,000 annual deaths from alcohol misuse and the 5,000 deaths from illicit drug use.

As a rule of thumb, based on population, we Canadians count our ongoing losses in terms of somewhat over one-tenth of the American estimate.

There is all the more reason for wondering about the Institute's direction and influence when we now know that illicit drug use almost always begins with and accompanies licit drug use. Surely it is wise-up time on the entire drug issue. Unless we include tobacco in our alcohol and other drug concerns, it is game over before we begin.

George F. Lewis,
Assoc. Prof. Anatomy,
Winona.

THE SPECTATOR

The Globe and Mail

SATURDAY, DECEMBER 9, 1989

Two-sided policy

Dr. Andrew Pipe correctly points out that Canadian pharmacists should be ashamed to be seen valiantly assisting us to good health while not so valiantly aiding many of us to destroy it (Why Pharmacists Should Not Sell Smokes — Nov. 23).

What a dangerous display of two-mindedness in regard to Canada's most devastating addictive drug: purveying nicotine in the form of chewing gum by prescription only across their pharmacy counter, while selling it freely in the form of cigarets across their tobacco counter.

George F. Lewis
Winona, Ont.

LETTER TO THE EDITOR

Horrors of smoking there for all to see

In writing of the horror of nicotine addiction (Jan. 31, Feb 7), I am simply pointing out what is there to see — if we know what to look for. It is safe to say, for example, that there is no greater difference between people than the difference between those who use tobacco smoke and those who don't.

Nothing ever before has been so thoroughly researched as the physical effect of inhaling cigarette smoke on the human body. And nothing ever before has been so clearly and so closely linked ~~casually~~ causally to so many highly undesirable consequences.

No other federally approved consumer product is known to kill over 40,000 Canadians every year and cripple hundreds of thousands more. Surely this is tantamount ot legalized genocide performed year in and year out by the tobacco industry and its eager accomplices on Parliament Hill.

Picture the entire population of Stoney Creek, for example, disappearing every 365 days, more than 100 a day courtesy of inhaling cigarette smoke. If this doesn't indicate that Canada's current approach to disaster control needs drastic revision, I don't know what does. At the turn of the century this picture will be the same unless we take aggressive remedial action NOW!

Indeed, the most powerful argument today for legalizing the controlled use of crack-cocaine is the legal status of uncontrolled tobacco use.

George F. Lewis

Medical Prescription
DO NOT INHALE !
Social Prescription
DO NOT EMIT !

3(b)

BALLOONMAN OF CANADA
A Division of: Pioneer International Limited

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March 6, 1990

City of Toronto
Executive Committee of the City Council

To All Committee Members:

A copy of your recent action against latex balloons has come to my attention. It seems that you have received a good deal of misinformation regarding balloon releases.

My own efforts to research the sources for most of the information has led me back to one of two original sources. Often times, information supplied from these has made its way through one or more exchanges and is then presented by another source as verified fact. For example, the producer of CBS News "Earth Quest" segment received "original" information from one source and "confirmed" the information from sources who were using the original source as their information source. This process has created a self-confirming circle of misinformation.

To the best of our extensive research, a latex balloon from a balloon release has never caused the death of any sealife. We have found an incident regarding a whale is often presented as such, but examination of the facts reveals that this is not correct. The necropsy of the whale found the remains of a mylar balloon amid several pounds of plastics trash. Mylar balloons are much more expensive than latex balloons, and are not used in balloon releases (they are; however, sometimes used by lobster fishermen to mark traps). Further, the balloon is often cited as cause of death in this example; but upon close cross-examination under oath it has been admitted that the accumulation of plastics was the cause of death, and no one item could be pinpointed as the precise cause of death.

Often times it is stated that latex balloons are not biodegradable. This is a total misrepresentation of fact. Latex balloons are fully biodegradable and photodegradable. We cannot state a precise time for the breakdown because -- as with any biodegradable substance -- degradation time will vary, depending upon precise atmospheric conditions. It is safe to say that under similar conditions a latex balloon would degrade faster than an oak leaf.

It is also often stated that, at the very least, latex balloons cause an unsightly "pollution" problem. This assertion is "proved" by "facts" like, "when you release that many balloons, they all have to come down." While this proposition is true, the assumed corollary -- that they all return to earth in one spot -- is absolutely not true. I travel extensively in my job, have walked many beaches, and have yet to find one case of a multitude of balloons littering the landscape. Further, I have never found anyone who, when questioned, can confirm a similar sight.

I honestly don't know why several people have decided to make the balloon release question their cause; maybe they are tired of fighting the large industries such as plastics and petrochemicals which are the true source of our oceans' plastics problem. Because the balloon distribution system is so entrepreneurial, the so-called environmentalists are fighting very small companies who most often don't have the time, energy, or resources to fight the battle.

I am an environmentalist and a responsible business person; I do not believe that any industry has the right to harm our environment. I also do not believe that companies have the right to produce products which they know are dangerous to the environment. This sentiment is endorsed by the rest of Pioneer's executive management as well.

I have enclosed some support materials for your reference. I urge you t consider the facts and revise your action. I would be happy to discus the matter further.

Sincerely,

Bruce Fraser
National Sales Manager

BF/jp
Encl.

3c

Letters to the Editor:

Tire fire offers environmental lesson

The tire fire near Hagersville is a sad and unnecessary occurrence. The lack of preventive action clearly points to the failure of our elected officials and the bureaucracy to deal with environmental issues.

Unfortunately humans and politicians respond to catastrophes much more than they do to gradual change. Because depletion of the ozone shield by chlorofluorocarbons (CFCs) is a nebulous, hard-to-conceive process, taking place unseen, high in the stratosphere, politicians tend to give lip service only to the solution of the problem. It will, however, have effects on humanity and the planet thousands of times more damaging than this unnecessary tire fire.

Hundreds of pounds of refrigerants (CFCs) are being allowed to escape to the atmosphere by the refrigeration industry in Ontario each day. Yet, all levels of government refuse to regulate the sale and use of these lethal chemicals. The CFC manufacturers such as the Du Pont and Allied Chemicals and professional organizations such as the Heating, Refrigerating and Air Conditioning Institute and the Refrigeration Service Engineers Society are all passing the buck.

No effective programs are in place to stop needless release to the atmosphere of CFCs. Recovery, reclaim and safe disposal systems are not in use three years after the Montreal Protocol and 16 years after Sherwood Rowland and Mario Molina gave the world warning. The Montreal Protocol, which controls the amount of CFCs produced, is in effect creating an artificial shortage of CFCs. This has already led to major price increases, and the price of refrigerants will probably triple in the next two years. It does not regulate the sale or use of CFCs.

Several American states are moving to control the purchase and use of CFCs. Ohio will require the certification of all businesses and the training of all workers who handle CFCs by 1991. To be registered, proof of purchase of recovery equipment would be necessary along with compliance with other strict conditions.

We need similar legislation in Ontario and in Canada that will be strictly enforceable, at the very latest by Jan. 1, 1991. The political procrastination that allowed the Tyre King blaze must end in regard to the far more serious ozone depletion disaster that lies in our near future.

JIM TAPLAY
Grimsby

THE TORONTO STAR.
TUESDAY- MARCH 13.1990

3d

Region wrestling with bylaw to protect ozone

By BETH MARLIN
The Spectator

IT MAY not be legally enforceable, but a regional committee has sent its lawyer back to the drawing board for a pollution control bylaw.

Members of the chairman's advisory committee on environmental issues yesterday rejected a legal opinion against passing a bylaw to control the disposal and servicing of chlorofluorocarbons, which are harmful to the ozone layer.

Legal services commissioner Ken Anderson explained the region had no more jurisdiction to encroach on recent provincial CFC legislation than it would to change the federal Criminal Code.

"It's not your area. You simply don't have the jurisdiction," Mr. Anderson told the committee.

However, Mr. Anderson later said his department, which is understaffed and overworked, would take another stab at the problem, possibly by beefing up the region's trades-licensing bylaws.

"We're just not happy with that recommendation that we not prepare a bylaw," committee chairman John Prentice told Mr. Anderson. "We can't pass laws that we can't enforce and we have no jurisdiction for, but if there is some sort of bylaw (possible), we want it in Hamilton-Wentworth."

Refrigeration tradesman Jim Taplay convinced the committee in November to push for a CFC bylaw similar to one passed almost a year ago by Toronto city council.

Yesterday, Mr. Taplay told the committee the province's legislation is inadequate and has taken too long to put in place.

"The province is doing absolutely nothing in the way of CFC regulations in refrigeration," said Mr. Taplay. "It is not a legal decision. It is a political decision as to whether the regional councillors have the political guts to do something."

CFCs are routinely released from air conditioners and refrigerators during disposal, repair and while malfunctioning, he said. CFCs rise to the stratosphere and destroy the ozone layer, which filters out harmful ultraviolet radiation.

The federal government has committed itself to eliminating CFC use within ten years.

According to Mr. Taplay, the region's year-old trades-licensing bylaw will encourage the irresponsible handling of CFCs by appliance repairmen because it does not require a five-year apprenticeship, as required under Ontario legislation.

Mr. Taplay said the region didn't worry about its legal jurisdiction when it "overrode the (Ontario) Apprenticeship Act in their trades-licensing bylaw."

Committee member Brian McHattie agreed.

"Everyday, refrigeration tradesmen are bringing appliances back to their shops and venting CFCs into the air," said Mr. McHattie. "Whether the province has passed some sort of a law or not, nothing's happening out there."

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GOVERNMENT DOCUMENTS

MAY 10

REGIONAL CHAIRMAN'S ADVISORY COMMITTEE ON ENVIRONMENTAL ISSUES

AGENDA

DATE:	Thursday, May 10, 1990
TIME:	8:30 o'clock a.m.
PLACE:	15th Floor Committee Room Regional Offices

---

1. GENERAL

a) **Declaration of Interest re:** Municipal Conflict of Interest Act
b) Minutes of the Chairman's Advisory Committee on Environmental Issues Committee Meeting of April 12, 1990

2. DELEGATION

Representatives from the Environmental Advisory Committee for the Regional Municipality of Halton.

3. NEW BUSINESS

3.1 Terms of Reference - Review

For Committee Discussion.

3.2 Correspondence from Brian McHattie, Rashne Baetz, Paul Muldoon re: Restructuring of Committee

For Committee Discussion.

3.3 For the Information of the Committee

Correspondence from John Sweeney, Minister of Municipal Affairs re Bruce Trail access to the Red Hill Creek Valley from the Red Hill Creek Expressway.

4. ADJOURNMENT

3.1

CHAIRMAN'S ADVISORY COMMITTEE

ON ENVIRONMENTAL ISSUES

TERMS OF REFERENCE

The Advisory Committee has the mandate to enquire into and to report, through the Engineering Services Committee, on matters relating to:

1. Solid Waste

   a) Policies and procedures for the effective management of solid waste

   b) New technologies, policies and ventures, and strategic distribution of the waste stream for:

      i) waste reduction
      ii) Glanbrook Landfill Site and Transfer Stations
      iii) S.W.A.R.U. energy from waste facility

   c) Recycling opportunities

   d) Planning and development of a process for the disposal of contaminated materials

2. Hamilton Harbour Remedial Action Plan

   a) Review and comment on recommendations related to the rehabilitation of the Hamilton Harbour

   b) To act as the Region's liaison with the Hamilton Harbour Remedial Action Plan Stakeholders Group

3. Municipal Industrial Strategy for Abatement (MISA)

   Monitor, review and report on matters relating to Provincial legislation governing MISA.

4. Natural Areas

   Assist, review and comment on environmental matters relating to Natural Areas.

5. Public Education/Information

   To provide a forum for members of the public to become aware of and share in matters relating to the environment.

Schedule I

Proposed Environmental Committee

Title	"Chairman's Advisory Committee on Environmental Issues"
Reports To	Engineering Services Committee
Duration	To be reviewed after each Term of Council
Composition	10 Members as follows:

4 Regional Councillors
Vice-Chairman, Engineering Services Committee -
- Councillor John Prentice

3 to be appointed by Council -
- Councillor Geraldine Copps
- Councillor Brian Hinkley
- Councillor Henry Merling

3 Environmentalists	- Paul Muldoon Hamilton Environmental Action Team (H.E.A.T.)
	- Rashna Baetz Conserver Society of Hamilton District
	- John Struger Hamilton Naturalist Club
1 Business Representative	- Cuppy Katz Cuppy Katz Enterprises Inc.
1 Academic Representative	- Prof. Keith Murphy Department of Civil Engineering McMaster University
1 Labour Representative	- Bill Pedder International Union of Operating Engineers

Schedule I

Chair	Vice-Chairman of the Engineering Services Committee
Vice-Chair	Citizen Member to be appointed at first meeting
Special Advisors	One representative from the Ministry of Environment Commissioner of Engineering or designate(s)
Support Staff	To be provided by the Engineering Department

3.2

May 10, 1990.

To: Chairman and Committee members
Chairman's Advisory Committee on
Environmental Issues

From: Brian McHattie, Rashne Baetz, and Paul Muldoon

SUBJECT: RE-STRUCTURING OF COMMITTEE

As you know we have some serious concerns as to how this committee has functioned over the past nine months.

The Region of Hamilton Wentworth is no different than any other municipality. It has within its boundaries a great number of very complicated and threatening environmental concerns which need to addressed.

The committee is in need of positive changes to allow it to meet the environmental challenges of Hamilton Wentworth head on. The following text is our recommendation on how to achieve this goal and demonstrate to all that this committee means business.

There are a number of changes that must be implemented should this committee wish to succeed in its task, they are as follows organized under subject:

MEMBERSHIP

* Effective July 1, 1990 committee membership should be increased to twelve from its current nine members, with representation coming from the Hamilton Region Conservation Authority, the Hamilton Board of Education and an additional citizen at large.

* Membership should be for a two year term with current members to serve until May 31, 1991. Members would be required to stand for re-election at that time.

* Chairman and vice-chairman' should be elected for a two year term by the members of the committee

* Members missing two meetings without an explanation should be replaced subject to a vote by the committee.

* Members will not represent any particular group or organization.

SUB-COMMITTEES

It is very inefficient to attempt to deal with the very important and complicated issues present in the space of a three hour meeting

* Eight sub- committees be set up effective July 1, 1990 as follows:

- Natural Areas **
- Solid Waste
- Transportation
- Education
- Water Quality
- Air Pollution
- Energy
- Aims & Objectives- Environmental Vision for Ham - Went.

** Natural Areas: We feel this sub-committee is of special importance as land use promises to be the most important environmental issue of the next decade. This committee would be expected to perform the following functions:

- Review development applications in Environmentally Sensitive Areas (ESAs)
- Review Environmental Impact Statements
- Monitor activities in ESAs
- Provide a public awareness program on Hamilton Wentworth's natural environment

* This committee should be recognized in the Official Plan in the section discussing procedures for review of development proposals adjacent to or within Environmentally Sensitive Areas (ESAs).

Due to the levels of expertise required in these subjects and the expected workload, membership on sub-committees would be augmented by other non- committee persons who would be solicited by advertisements in the various levels of media.

We recommend an additional sixteen sub-committee members be sought for endorsement by July 1, 1990. These people would not sit on the full committee. Membership on the sub-committees would consist of at least one member of the full committee and non-members to a total of three or four people per sub-committee.

REPORTING AND RECEIVING

Environmental concerns are the common thread through all departments of a government and indeed all parts of our community. Therefore we recommend the following:

* That investigation be undertaken to designate the committee as a standing committee of council should that be deemed in the best interests of the environment.

* Barring the above, that this committee report jointly to both the Economic Development and Planning and Engineering Services committees.

* That all environment related issues be brought to this committee first before going to any other committee. This might be accomplished by scrutinizing the agendas of other committees to determine whether any items should be referred to this committee first.

In closing we have to say that the changes we have proposed have been designed to be of benefit to one thing and one thing only and that is the environment. It is no longer good enough to be seen to be addressing environmental issues haphazardly. As the media is fond of telling us this is the "Critical Decade", let us think globally yet act locally and make our mark on Hamilton Wentworth in the nineties.

MEETING STRUCTURE

* It is mandatory that meetings take place in the evenings to allow for true public participation as has is the case in the newly formed Taskforce on Sustainable Development thus eliminating members having to take time off their work during the day.

* Staff representatives should be present from the following departments at all meetings: Engineering, Planning, Public Health and Legal

* Any outstanding items should be listed at the bottom of each agenda until they are satisfatorily dealt with.

3.3

Ontario

Office of the
Minister

Bureau du
ministre

Ministry of
Municipal
Affairs

Ministère des
Affaires
municipales

777 Bay S
Toronto, (
M5G 2E5
(416)585-7000

(416)585-7000

Recd
Apr 20/90
J.P.

April 9, 1990

Mr. John Prentice
Chairman's Advisory Committee
on Environmental Issues
Regional Municipality of Hamilton-Wentworth
P.O. Box 910
Hamilton, Ontario
L8N 3V9

Dear Mr. Prentice:

Thank you for your letter regarding your concerns over Bruce Trail access to the Red Hill Creek Valley from the Red Hill Creek Expressway.

I have copied your letter to the Honourable William Wrye, Minister of Transportation, as his staff is working directly with the Regional Municipality of Hamilton-Wentworth on this project. My colleague has assured me that his staff is working to negotiate an acceptable solution to the access issue.

Thank you for your invitation to send a Ministry representative to the April 12, 1990, meeting of the Chairman's Advisory Committee on Environmental Issues; however, it would be more appropriate to forward your request to the Minister of Transportation.

Sincerely,

Sweeney

John Sweeney
Minister

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1990

Ruth Greenwood
Hamilton Public Library
Urban Municipal Collection, 2nd Fl
55 York Boulevard
Hamilton, Ontario
L8R 3K1 (PI)

Aug. 9

CHAIRMAN'S ADVISORY COMMITTEE ON ENVIRONMENTAL ISSUES

URBAN MUNICIPAL
AUG 15 199
GOVERNMENT DOCUMENTS

AGENDA

DATE: Thursday, August 9, 1990

TIME: 8:30 o'clock a.m.

PLACE: Committee Room, 15th Floor
Regional Offices

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1. GENERAL

a) **Declaration of Interest** re: Municipal Conflict of Interest Act
b) **Minutes of Chairman's Advisory Committee on Environmental Issues Committee Meeting - July 12, 1990**

2. DELEGATION

2.1 Spraying of Pesticides

Mr. R. Speiering, and Mr. M. Pastore to discuss this issue.

3. NEW BUSINESS

3.1 Joint Staff Committee on Recycling Initiatives

a) That the City and Regional Administrative Committees be requested to strike a joint staff committee composed of employee representatives of the various strata of the organizations, including representation from the Purchasing Department to develop new policies and programs for the expanded use of products and services that contain the maximum level of post-consumer waste and/or recyclable content, without significantly affecting the intended use of the product or service;

b) That the joint staff committee report back to the Finance and Administration Committee with their recommendations.

4. **FOR THE INFORMATION OF THE COMMITTEE**

   a) Correspondence from Rashne Baetz on the Region's need for a bike path connecting Ancaster and Dundas.

   b) Newspaper article appearing in the Calgary Herald, June 21, 1990, "Mountain of compost is rotten to the core", from Councillor Drury.

   c) Status of New York State Deposit Legislation.

   d) Correspondence from Councillor Hinkley, Mr. D. Heintz, and Mrs. T. Yull regarding "Litter Containers and Recycling".

   e) Newspaper article appearing in The Spectator, June 8, 1990, "Environmentalists a motley, combative bunch, Issacs says".

5. **ADJOURNMENT**

1 b)

MINUTES OF THE CHAIRMAN'S ADVISORY COMMITT ON ENVIRONMENTAL ISSUES

The Chairman's Advisory Committee on Environmental Issues met at 8:30 a.m. on Thursday, July 12, 1990 in the Committee Room, 15th Floor, Ellen Fairclough Building, Hamilton.

Present:	Chairman (Councillor) J. Prentice Councillor B. Hinkley Prof. K. Murphy, R. Baetz B. McHattie, R. Steward, L. Thompson, C. Katz
Also Present:	J. Halliday, V. Terluk, P Jensen, J. Barr, Ms. D. Edwards

1. GENERAL

a) Declaration of Interest re: Municipal Conflict of Interest Act - none

b) **Minutes** of the June 14, 1990, meeting of the Chairman's Advisory Committee on Environmental Issues Committee
(**Murphy/Katz**) be received and adopted as amended.

CARRIED

Ms. Baetz was unclear on Item 2.3 ii), where it stated that K. Drage Park, itself, does not cause environmental problem. Should indicate that it is extremely difficult to exactly pinpoint where pollution is originating.

That Item 2.4 be referred to the Water Quality Committee.

2. NEW BUSINESS

2.1 Review Terms of Reference
(McHattie/Baetz)

The members reviewed the Revised Terms of Reference and indicated that after the words "on matters relating to", add "environmental concerns", and in the section, "Members of Subcommittee" in the last section, after "required", add "or at minimum of once per month".

That the Hamilton Region Conservation Authority member be a staff member;

That the Hamilton Board of Education member be a staff member.

It was agreed that the secretary would poll the members of the Engineering Services Committee in order to add the Revised Terms of Reference to the Engineering Services Committee Report to Council, July 17, 1990.

Ms. Baetz asked about, out-of-pocket monies spent by members of this Committee and its subcommittees.

Councillor Hinkley indicated that photocopying, or other minor expenses should be covered by either the Clerk's or Engineering Department. It was agreed that the two new representatives to the Committee be staff people.

(McHattie/Baetz)
That the Terms of Reference as revised be approved. Alternative times and dates for this meeting to be discussed at the next meeting. **CARRIED**

2.2 Former Brampton Street Landfill Site
(McHattie/Hinkley)

Referred from Engineering Services Committee **CARRIED**

2.3 Correspondence from Mayor S. R. Napper, City of Stoney Creek, re: Niagara Escarpment Plan Amendment 52/89
(Murphy/McHattie)

Note: The purpose of the amendment is to delete waste disposal and related uses as a permitted use in the Escarpment Natural, Protection and Rural areas and the Mineral Resources Extraction Areas. This amendment was not approved.

Professor Murphy indicated that the Escarpment should be preserved and that we should be expressing our concerns and supporting the Amendment.

Councillor Prentice said that he could not endorse the decision of the Stoney Creek Municipal Advisory Committee in not supporting the Amendment.

That a letter be forwarded to the Chairman of the Niagara Escarpment Commission indicating that the Chairman's Advisory Committee on Environmental Issues of the Hamilton-Wentworth Region, strongly support Niagara Escarpment Plan Amendment 52/89 and we wish to go on record as being in agreement with the Amendment. **CARRIED**

2.4 Environmental Purchasing: Paper Products

Councillor Hinkley said that a study is under way by the City/Region Purchasing Department, and he indicated that Mr. Jenson should work along with them, and also, that the Administrative Committee be involved. Councillor Hinkley said he will be discussing this Item with Mr. Bradley.

Ms. Baetz asked if recycling would be part of the Report.

Councillor Hinkley indicated that a purchasing policy on recycling is in the final stages at the present time. **CARRIED**

3. OTHER BUSINESS

i) Blue Box Program

Mr. Terluk advised that two bids had been received on the expansion of the Blue Box Program. The members were advised that Third Sector was recycling paper from City Hall a few years ago, but demands on Third Sector increased to the point where this paper could no longer be picked up.

Mr. Terluk indicated that before we start a similar plan, that a master plan must be in place. He indicated that Phase 1, an expanded Blue Box Program will be discussed at our August meeting, and Phase 11 of the Plan, at our September meeting.

ii) Composting Program

Mr. Terluk said that the long term program will be evaluated, from January to April of 1991. A co-op student will be hired in 1991 to do an in-touch study with a sampling of the residences that purchased the composting units. Mr. Terluk advised that a major composting program being considered by the Region, could cost 5 to 6 million dollars to implement.

Ms. Baetz suggested that we not accept contributions from any organization, as this could suggest that we are endorsing their products.

It was indicated that Mississauga will be a test site for disposal diapers.

Mr. Katz suggested that industries should be the ones approached to do a selling job on recycling. **CARRIED**

3. **FOR THE INFORMATION OF THE COMMITTEE (Murphy/Katz)**

a) Disposal of Household Hazardous Wastes

Ms. Baetz asked where these wastes are going at the present time.

Mr. Terluk advised that some of the products are recycled. The rest are taken by Tricil to a properly licensed Hazardous Waste Area. The members agreed that with more Hazardous Waste Days, that this type of waste is being handled more efficiently now.

b) Mandatory Recycling

Mr. Terluk informed the members that the Ministry is doing a study on a User Pay System. He also advised that Seatle is using this type of system now. Mr. Jensen is working on a user pays system, and this information will be available soon.

Ms. Baetz thinks that the general public would accept a User Pays System.

Councillor Prentice still feels that there is a large segment of the population that will find another place to dispose of their garbage. A suggestion was made, by using a bar code system, or paying for garbage bags.

Councillor Prentice suggested that waste can be reduced with proper recycling.

Mr. McHattie indicated that recycling is not always the best way, as refillables are better where liquid is concerned.

Mr. Terluk felt that reduced packaging must be dealt with at the Provincial and Federal levels.

Professor Murphy indicated that litter in New York State is less than in Ontario because of the deposit on cans and bottles.

Ms. Baetz stated that if the public had to pay for the disposal of garbage by the bag, then the manufacturers would have to cut down on the packaging.

Mr. Terluk indicated that the Solid Waste Section could look at the New York System for returning cans and bottles.

c) Zebra Mussels

Mr. Halliday advised that the Region would be spending $500,000 to install extra chlorination at the ends of our water intakes (Bell Mouth).

Ms. Baetz asked if the Zebra Mussles had any purifying effect on the lake.

Mr. Halliday advised that it did, that the clarity of the water in Lake Erie, where the mussels are located, had increased from 18" to 5'. Mr. Halliday also indicated that this was good for humans, but bad for aquatic life.

(Katz/Hinkley)
That this information be received. - **CARRIED**

Mr. McHattie suggested that the Terms of Reference for the Subcommittee, including names, be available for our September meeting.

Mr. McHattie asked about the Report on CFC's. Ms. Edwards is still working on the Report.

Mr. Terluk advised the Members, that SWARU is meeting all Ministry of Environment Shack Emission requirements.

Mr. McHattie asked if the Health Department had done any studies on the people that live in the area around SWARU.

Mr. Terluk advised that some groups have done studies.

Professor Murphy indicated that industry would also have an affect on the air quality in East Hamilton.

Mr. Katz suggested that there is less litter in New York State than in Ontario, because of education on this subject.

Mr. Terluk advised that the Solid Waste Section is educating children, and the Region makes presentations at schools when requested.

Councillor Hinkley indicated that The Hamilton Mascot, by the name of "Spotless", is visiting difference areas of the City promoting a cleaner Hamilton.

Ms. Baetz expressed her concerns with children picking up litter without any protection for their hands, as it could cause a health hazard.

Councillor Hinkley indicated "yes", there are injuries involved in every field of endeavour, but that we should not be discouraging children who are trying to make Hamilton-Wentworth a cleaner place to live by picking up litter.

CARRIED

On Motion (**Hinkley/McHattie**) the meeting adjourned at 11:20 a.m.

CARRIED

Chairman

Secretary

RECEIVED

2.1

CITY COUNCIL
HAMILTON, CANADA

Alderman Don Drury

71 MAIN STREET WEST L8N 3T4 • (416) 546-2730 • RES. (416) 545-7077 – WARD 3

13 July 1990

Chairman Reg Whynott
Chairman of the Chairmen's
Advisory Committee on the
Environment

Dear Chairman Whynott:

I recently had an interesting discussion with Mr. Rob Speiering. Acting President of the Hamilton Pesticide Action Group. This is an Ad Hoc group of environmentalists and residents of the City of Hamilton concerned about the use of pesticides in the Hamilton-Wentworth Region. Specifically. Mr. Speiering and his group have been attending various forms throughout Southern Ontario that have looked into alternatives to the use of pesticides. In particular. a fairly recent development in the science in the control of insects and organic pests is the Integrated Pest Management System. (I.P.M.)

The Hamilton Pesticide Action Group would be more than pleased to meet with your Committee as a delegation in the near future to inform the Committee of the problems associated with pesticide spraying and discuss some of the alternatives to pest control upon which your Committee could act.

I would be most appreciative if you would communicate directly with Mr. Speiering and myself and advise us of your intentions regarding granting his request to appear before your Committee.

Sincerely,

Don Drury
Alderman, Ward 3

DD:jf

c.c. Mr. Rob Speiering, 34 Grant Avenue. Apt. 3. Hamilton. L8N 2X5
Mr. Michael Pastore, Canvass Director. Greenpeace Hamilton
228 King Street West. Hamilton. L8P 1A7

THE REGIONAL MUNICIPALITY
OF HAMILTON - WENTWORTH

Office of the Chairman

MEMORANDUM

DATE: July 20, 1990

TO: Councillor Don Drury

FROM: Regional Chairman Whynott

RE: Letter of July 13th RE: Hamilton Pesticide Action Group

In response to the above noted letter regarding Mr. Rob Speiering of the Hamilton Pesticide Action Group and his delegation's wish to appear before the Chairman's Advisory Committee on Environmental Issues, please be advised that I have forwarded a copy of this letter to the Secretary of this Committee with hope that the Committee will respond favourably to this request in the near future.

Your interest is appreciated.

cc: Jack Ramsay, F.Y.I. only

P.O. Box 910, Hamilton, Ontario L8N 3V9
119 King Street West, 15th Floor
Tel: (416) 546-4200 Fax: (416) 546-2340

3.1

Corporation of the City of Ham

Memorandum

****

TO: Mr. R. C. Prowse
Regional Clerk

YOUR FILE:

FROM: Mr. K. E. Avery
City Clerk

OUR FILE:
PHONE: 546-4587

SUBJECT: JOINT STAFF COMMITTEE ON RECYCLING INITIATIVES

DATE: 1990 July 13

Subjoined for your information and attention is a copy of Section 37 of the NINETEENTH Report of the Finance and Administration Committee dealing with the establishment of a joint City and Regional staff committee for the development of the new policies and programs that promote the use of post-consumer waste and products which are environmentally sound, which was adopted by City Council at its regular meeting held 1990 June 26.

In this regard I am attaching for reference purposes a copy of a letter from Mr. John Oddi, Chairman, Association of Professional and Administrative Employees, dated 1990 May 31, as well as a copy of a statement by Alderman Brian Hinkley regarding environmental purchasing. Also attached is a copy of a letter from Mr. Phil Jensen, Waste Reduction Co-ordinator, Solid Waste Operations, addressed to Councillor J. Prentice, Chairman, Chairman's Advisory Committee on Enviromental Issues.

Would you please ensure that the City's request for the establishment of a joint staff committee appears on the appropriate Committee agenda.

K. E. Avery

att.

c.c. Mr. M. Carson, Regional Chief Administrative Officer
Mr. J. Johnston, Commissioner of Human Resources
Mr. J. J. Schatz, Secretary, Management Team

Corporation of the City of Hamilton

Memorandum

TO: Mr. J. J. Schatz, Secretary
Management Team

YOUR FILE:

FROM: Mr. John Thompson, Secretary
Finance & Administration Committee

OUR FILE:
PHONE: 546-2747

SUBJECT: ENVIRONMENTAL CONCERNS - RECYCLING INITIATIVES

DATE: 1990 July 6

Subjoined for your information and appropriate action is a copy of Section 37 of the NINETEENTH Report of the Finance and Administration Committee adopted by City Council at its meeting held 1990 June 26.

I am also attaching for your information a copy of a letter from Mr. John Oddi, Chairman, Association of Professional and Administrative Employees, dated 1990 May 31, to which is attached a statement by Alderman Hinkley regarding environmental purchasing. Also attached is a copy of a letter from Mr. Phil Jensen, Waste Reduction Co-ordinator, Solid Waste Operations, addressed to Councillor J. Prentice, Chairman, Chairman's Advisory Committee on Environmental Issues.

In approving the subjoined resolution, direction was given that these pieces of correspondence be referred to the administrative committees for reference purposes.

John Thompson

c.c. Mr. L. Sage, Chief Administrative Officer
Mr. J. Johnston, Commissioner of Human Resources
Mr. D. Heintz, Secretary, Keep Hamilton Clean Committee
✓ Mr. J. Ramsey, Secretary, Chairman's Advisory Committee on Environmental Concerns
Ms. C. Coutts, Legislative Assistant, City Clerk's Department

37. (a) That the City and Regional Administrative Committees be requested to strike a joint staff committee composed of employee representatives of the various strata of the organizations, including representation from the Purchasing Department to develop new policies and programs for the expanded use of products and services that contain the maximum level of post-consumer waste and/or recyclable content, without significantly affecting the intended use of the product or service.

(b) That the joint staff committee report back to the Finance and Administration Committee with their recommendations.

18.

THE ASSOCIATION OF PROFESSIONAL AND ADMINISTRATIVE EMPLOYEES
OF THE CORPORATION OF THE CITY OF HAMILTON
INCORPORATED 1973
CITY HALL, P.O. BOX 2040, HAMILTON, ONTARIO L8N 3T4

MAY 31 1990

1990 May 31

Alderman B. Hinkley, Chairman
Finance and Administration Committee

Re: Environmental Concerns

At its meeting held 1990 May 16 the Association of Professional and Administrative Employees Executive Board and Department Representatives discussed their potential involvement in recycling initiatives in City Hall. The members are concerned that the City of Hamilton, as a Community Leader, has not taken the initiative to utilize recycled materials or, to recycle the materials that are presently being used. We were pleased to find out that the City and the Region are investigating various possibilities for: recycling, the use of recycled paper, the abandonment of the styrofoam cup, etc. in City Hall. It is our intention to regularly promote an environmentally friendly attitude amongst the APAE membership,

We wish to advise that the Association of Professional and Administrative Employees strongly supports any initiative which targets the reduction in the amount of waste that City employees produce. We would be pleased to assist in any upcoming initiatives in this regard.

Yours truly,

John Oddi

Mr. J. Oddi, Chairman
APAE

JO:bk

cc: Mr. D. Carson, Executive Assistant
to the Mayor

Mr. L. Sage, Chief Administrative Officer

Mr. J. Ramsey, Secretary
Chairman's Advisory Committee on Environmental Issues

Mr. D. Heintz, Secretary
Keep Hamilton Clean Citizens' Committee

CITY COUNCIL

Brian Hinkley Alderman Ward Three

71 Main Street West
Hamilton, Ontario
L8N 3T4

Tel: (416) 546-
Res: (416) 572-

Finance & Administration Committee -Chairman

Keep Hamilton Clean Committee -Chairman

Seniors Centre Feasibility Study -Chairman

Harbour Task Force -Chairman

Handbill Sub-Committee -Chairman

Hamilton Municipal Retirement Fund -Chairman

Hamilton Seniors Council -Liason

Parks & Recreation Committee -Member

Hamilton Non-Profit Housing -Member

Regional Engineering Committee -Member

Regional Economic & Planning Committee -Member

Chairman's Environmental Advisory Committee -Member

Hamilton-Wentworth Children's Aid Society -Member

Recycled Paper

STATEMENT

ON JULY 1, 1989 I STARTED TO STORE AWAY ALL INCOMING MAIL, REPORTS AND OTHER PAPER MATERIAL.

WHAT YOU SEE BEFORE YOU IS APPROXIMATELY 90 % OF THE PAPER THAT I WOULD NORMALLY HAVE RECEIVED AND THEN THROWN INTO THE WASTE BASKET.

THIS 11 MONTHS OF PAPER, IF PILED TOGETHER AND AVERAGED OVER A ONE YEAR PERIOD WOULD TOTAL IN EXCESS OF 19 1/2 FEET HIGH AND OVER 560 LBS. ASSUMING THE SAME PAPER LOAD OVER THE PAST 13 1/2 YEARS I HAVE SERVED ON COUNCIL; THE TOALS WOULD REPRESENT WELL IN EXCESS OF 270 FEET AND ALMOST 8,000 LBS OF PAPER.

MUCH OF THIS PAPER COULD BE RECYCLED AND A CONSIDERABLE AMOUNT COULD HAVE BEEN USED ON RECYCLED PAPER IN THE FIRST PLACE.

IN SEPTEMBER LAST YEAR, I REQUESTED MR. TOM BRADLEY, THE CITY'S DIRECTOR OF PURCHASING AND MR DON ELDER, REGIONAL CO-ORDINATOR OF PURCHASING TO ATTEND THE SEPTEMBER 14TH. MEETING OF THE CHAIRMAN'S ADVISORY COMMITTEE ON ENVIRONMENTAL ISSUES. A FIVE PART MOTION WAS PASSED AT THAT MEETING WHICH SUBSEQUENTLY LED TO THE REGION'S PARTICIPATION; ALONG WITH SEVERAL OTHER MUNICIPALITIES AND PUBLIC AGENCIES IN A STUDY ENTITLED "THE PURCHASING OF PRODUCTS CONTAINING POST-CONSUMER WASTE AND OR PRODUCTS WHICH ARE ENVIRONMENTALLY SOUND".

THE STUDY HAS IDENTIFIED MANY ALTERNATE PRODUCTS WHICH THROUGH THEIR PURCHASE, PROMOTE THE USE OF POST-CONSUMER WASTE AND CONSIDERED ENVIRONMENTALLY SOUND.
EXAMPLES WOULD INCLUDE:

- AN ARRAY OF OFFICE PAPER PRODUCTS
- SANITARY PAPER PRODUCTS
- RECYCLED PLASTIC PRODUCTS
    - LITTER CONTAINERS
    - FENCING
    - PARK & PLAYGROUND EQUIPMENT
    - POSTS & LUMBER
    - FURNITURE THAT CONTAINS NON CFC'S PADDING

I HAVE PERSONALLY TAKEN THE FIRST STEP TO FURTHER RECYCLING EFFORTS BY USING RECYCLED PAPER FOR MY LETTERHEAD.

THE PURCHASING DEPARTMENT IS PRESENTLY EXAMINING THE POSSIBILITIES OF PURCHASING PRODUCTS WITH GREATER AMOUNTS OF POST-CONSUMER WASTE. EMPLOYEES OF THE CITY HAVE APPROACHED ME ABOUT RECYCLING INITIATIVES. THE ASSOCIATION OF PROFESSIONAL AND ADMINISTRATIVE EMPLOYEES OF THE CORPORATION OF THE CITY OF HAMILTON WANT TO PARTICIPATE AND ASSIST IN THE 4 R'S (RECYCLE - RE-USE - REDUCE - RECOVER).

THESE INITIATIVES IN ORDER TO BE SUCCESSFUL REQUIRES STRONG SUPPORT FROM CITY AND REGIONAL COUNCIL. IN ORDER TO SUPPORT THE ENTHUSIASM AND EAGERNESS OF OUR EMPLOYEES AND TO SPEED THE CITY'S AND REGION'S EFFORTS IN THE AREA OF RECYCLING I WILL BE PUTTING FORTH THE FOLLOWING MOTION.

> "THAT CITY AND REGIONAL COUNCIL STRIKE A JOINT STAFF COMMITTEE COMPOSED OF EMPLOYEE REPRESENTATIVES OF THE VARIOUS STRATA OF THE ORGANIZATIONS, INCLUDING REPRESENTATION FROM THE PURCHASING DEPARTMENT."

THE STAFF COMMITTEE WILL BE RESPOSIBLE FOR THE DEVELOPMENT OF NEW POLICIES AND PROGRAMS THAT PROMOTE THE 4 R'S. THE RECOMMENDATIONS THAT COME FORTH WILL BE SENT TO THE APPROPRIATE STANDING COMMITTEES FOR APPROVAL AND IMPLEMENTATION.

N.B.#1

THE REGIONAL MUNICIPALITY OF HAMILTON-WENTWORTH

Department of Engineering
71 Main Street West, Hamilton, Ont. L8N 3T4

Tel. (416) 546-4170
Fax (416) 526-6665

Refer to File No. E309-20
Attention of P. Jensen
Your file No.

June 6, 1990

Councillor J. Prentice, Chairman
Chairman's Advisory Committee on Environmental Issues

Re: Environmental Purchasing: Paper Products

Dear Councillor Prentice:

Regional Council, on October 3, 1989, approved the Statement of Principle for Environmental Purchasing as recommended by the Chairman's Advisory Committee. The Engineering Department is now employing the Statement of Principle in purchasing decisions.

The Statement of Principle reads as follows:

- "That in order to increase the development and awareness of Environmentally Sound Products, all departments in conjunction with Purchasing staff review their contracts and tender specifications for goods and services, to ensure that wherever possible and economical, specifications are amended to provide for expanded use of products and services that contain the maximum level of post-consumer waste and/or recyclable content, without significantly affecting the intended use of the product or service, and it is recognized that cost analysis is required in order to ensure that the products are made available at competitive prices."

As a practical application of the Principle, Solid Waste Operations investigated, and subsequently purchased, business cards printed on recycled paper. The card stock used contained 50% recycled fibre. The exercise of purchasing the cards may provide some useful information to the Committee.

Cont'd...

Environmental Purchasing: Paper products

Cont'd...

There are no specific guidelines with respect to the purchase of recycled paper. Selection must be made on a case by case basis, as recycled content alternatives exist for most grades of paper. The proportional content of recycled fibre varies widely, and there is a reasonable choice of paper textures, colours, and stock thickness available with recycled content.

As the term "recycled paper" is applied to both paper with post-consumer fibre and that containing mill sweepings, attention must be paid to percentage of recycled fibre contained in the paper. A low percentage may indicate the latter, and actually contain no post-consumer fibre.

Paper suppliers are responding to demand with a variety of products. Over the past few months, several large players on the supply side have announced major initiatives to convert their operations to recycled content production (Domtar, Noranda).

Future implications of demand for recycled paper include the potential viability of office and fine paper recycling programs. The development of Regional and Municipal internal recycling programs will be favourably impacted by demand for recycled paper. The decision to purchase paper with recycled content will 'close the loop'; the practice of paper recycling is incomplete without the corresponding act of purchasing paper with recycled content.

The Statement of Principle states that a "cost analysis is required in order to ensure that the products are made available at competitive prices". Information from paper suppliers indicates that recycled paper may cost five to ten percent more than paper with no recycled content, but in some cases, paper with recycled content can be less expensive than the alternative.

Cont'd...

Cont'd...

Solid Waste Operations staff actively encourage various sectors in the community to stimulate the recycling marketplace by practicing the principles of environmental purchasing. It is our hope that the experience of Solid Waste Operations in this regard will assist others who wish to pursue this practice, including other departments and agencies of the Region.

Phil Jensen, Waste Reduction Coordinator
Solid Waste Operations

PJ/vb

4 a)

Conserver Society
of Hamilton and District Inc.

REGIONAL CLERKS OFFICE

July 24, 1990

To: the CACEI members
From: Rashné Baetz

- Safe bicycle paths create opportunities for bicycling as a viable alternate means of transportation, thereby reducing pollution due to motor vehicles
- We need to fully support the initiative discussed in the following article.

Dundas Star Journal - July 18, 1990

Conservation authority wants bike path connecting Ancaster and Dundas

If the Hamilton-Wentworth Conservation Authority has its way, land under an abandoned railway line will soon be carrying a different type of freight.

CP Rail has begun to take out the railway line, which used to connect Hamilton and Brantford.

The conservation authority is negotiating with CP Rail to transform the railway into a scenic bike and hiking trail through the Dundas Valley.

"It would be the first off-road bicycle trail in the region," said Hamilton Alderman Terry Cooke, regional council's representative on the conservation authority.

It may cost about $500,000 for the conservation authority to buy the land from CP Rail, said Mr. Cooke, adding regional council should share the cost of developing and managing the trail.

But the cost of the project would be worth it, said Ben Vanderbrug, conservation authority general manager.

"It's a very unique stretch of railway. It has a gentle slope and meanders a bit throughout the valley."

The trail would begin at Jerseyville Road in Ancaster and end at Rifle Range Road in Dundas.

It would provide another "link to the valley," said Mr. Vanderbrug.

Mr. Cooke believes that the trail will eventually serve as a commuter link for residents using bicycles instead of cars to travel to work.

"We haven't been too successful with on-the-road bike trails because people don't feel safe competing with cars. This route would be safe and scenic."

Mr. Cooke views the bike trail as just the beginning of a movement to increase the number of bike trails in the region.

"There are other railway lines that have been abandoned. This is just the first piece of the puzzle," he said.

Mr. Cooke added the proposal already has the support of Regional Chairman Reg Whynott, and local aldermen Don Ross, Dominic Agostino and Fred Lombardo.

He hopes to get the region involved in the project by September.

A registered charitable organization. 155 James Street South, Suite 601, Hamilton, Ontario L8P 3A4

4 b)

To: Jack Ramsay, Secretary, Regional Engineering Services Cttee.

From: Alderman D. Drury

Mountain of compost is rotten to the core

By Phillip Jang
(Herald writer)

The transformed leaves of Chinook Park are almost ready for gardening duty.

All 94 tonnes of them.

In an experiment spurred by environmental concerns — and a manufacturer's offer to supply free garbage bags — the city's sanitation department has been composting a huge pile of leaves since last fall.

After eight months of rotting, leaves from the southwest Chinook Park neighborhood have become compost, the black gold of the gardening world.

"We had a good idea that it would work — composting has been around for years," said Rene Boone, sanitation special projects engineer.

The compost will be handed over to the city's parks and recreation department for use in park gardens, she said.

After assessing the quality of the compost this summer, and reviewing costs, city officials will decide in the fall whether leaves should be collected for another giant compost pile, she said.

Compost is touted for its soil enhancing abilities.

Municipalities across the country are looking at composting as a way of saving landfill space while at the same time recycling natural resources.

A special garbage truck made weekly rounds through Chinook Park last October, picking up bagged leaves from 489 households.

The leaves were then dumped out of the bags at the Forest Lawn landfill in southeast Calgary.

City workers coddled the leaf pile through the winter, encouraging the composting process by mixing the leaves around at least once a month and watering the pile when it got a little dry.

On a chilly winter day, a thermometer poked into the middle of the pile found temperatures around 55° to 60°C — indicating that the composting process was working well, said Boone.

Because emptying the plastic garbage bags was labor intensive, the city is considering other ways of collecting leaves, she said. "There are other types of bags. We'd look for a bag that breaks down well."

An alternative is backyard composting — an idea many Calgarians have already embraced. Gardening centres have reported brisk sales for composting bins, and the city's garden information telephone service is fielding scores of queries about compost.

Calgary Heurald June 21/90

THE REGIONAL MUNICIPALITY OF HAMILTON-WENTWORTH

Department of Engineering
71 Main Street West, Hamilton, Ont. L8N 3T4

Tel. (416) 546-4170
Fax (416) 526-6665

4 c)

Refer to File No. E309-20
Attention of P. Jensen
Your file No.

July 27, 1990

Mr. Chairman and Members
Chairman's Advisory Committee on Environmental Issues

Status of New York State Deposit Legislation

Members of the Committee:

ORIGIN

At its meeting of July 12, 1990, the Committee directed Solid Waste Operations staff to investigate the application of deposit legislation in New York State.

BACKGROUND

Information was obtained from Mr. Frank McNally, Deputy Director of the New York State Legislative Commission on Solid Waste Management.

Deposit legislation in New York, referred to as the Returnable Beverage Container Law, was initially enacted in 1982 as a litter control policy. A deposit of five (5) cents is applied to glass and metal (primarily aluminum) soft drink and beer containers. It is expected that wine coolers will be added to the list of containers subject to deposit in 1991.

The return rate for deposit containers is 85 to 88%, although the rate is lower in cities. There is currently a debate as to the fate of unredeemed deposit money which amounts to $60 to $80 million annually, with some thought that this money be converted to a state solid waste management fund.

Some retailers have difficulty with the receipt of returnable containers, the result being a cooperative effort to establish third party redemption centres.

Cont'd...

Status of New York State Deposit Legislation

Cont'd...

ANALYSIS

Despite the success of New York's deposit legislation, particularly in the area of effective litter control, the law is narrow in scope. As such, it is not considered to have a significant impact on the need for curbside source separation programs.

As a result, the New York State Legislative is moving forward with the proposed 21st Century Environmental Quality Bond Act for consideration by voters in November 1990. Under the proposed act, $300 million would be directed to municipal recycling projects. Of that amount, $140 million would be used to assist in the purchase and construction of needed infrastructure.

In general, the level of debate regarding the merits of returnable versus non-returnable containers in New York State equals that in Ontario. It appears that both jurisdictions are destined to have integrated and possibly similar waste management programs.

Refillable/returnable quotas exist in Ontario, and are based in part on the soft-drink industries curbside recycling performance. Currently, quotas are based on sales: 30 percent of all soft drinks sold must be sold in refillable containers. The status of returnables in Ontario is explained briefly in the appended report, the recommendations of which were adopted by Regional Council on July 17, 1990.

FINANCIAL IMPLICATIONS

N/A

RECOMMENDATION

That this report be received as information.

Ted Gill

E.M. Gill, P. Eng.
Acting Commissioner of Engineering

PJ/md
Encl.

cc: W.M. Carson, Chief Administrative Officer
cc: R.J. Whynott, Regional Chairman

E309-20
P. Jensen

June 21, 1990

Mr. Chairman and Members
Engineering Services Committee

City of Chatham Resolution - Use of Refillable Soft Drink Beverage Containers

Members of the Committee:

ORIGIN

City of Chatham has requested that Council consider and endorse their resolution regarding the Government of Ontario refillable soft-drink beverage container requirements and convey support for the resolution to the Minister of the Environment and local M.P.Ps.

BACKGROUND

Refillable or returnable containers include a deposit as part of the purchase price and are returned to points of purchase and reused. The use of these containers is one way in which corporate citizens take direct responsibility for the disposal of product packaging as these containers are diverted from the waste stream in a manner that does not rely on curbside collection systems.

The City of Chatham resolution expresses concern that soft drink manufacturers are not maintaining refillable quotas as set out by Ontario Government legislation. Additionally there is a concern that the Ontario Government intends to decrease the existing quotas.

Cont'd...

44

City of Chatham Resolution - Use of Refillable Soft Drink Beverage Containers

Cont'd...

ANALYSIS

The Ministry of the Environment (MOE) has indicated to staff that refillable container quotas will not be removed and will continue to be enforced. The MOE advises that the only contemplated change to the regulation is in how the refillable container quotas are measured. It is felt that measuring the quotas in terms of percentage of production capacity rather than the current percentage of sales would be more reasonable.

The use of refillable containers reduces the reliance on municipal collection and disposal systems and although there is no change in the current legislation, the request for the maintenance of minimum refillable soft-drink container requirements as expressed in the City of Chatham resolution, is consistent with Regional solid waste management objectives, and therefore worthy of support.

FINANCIAL CONSIDERATIONS

N/A

RECOMMENDATION

a) That Regional Council endorse City of Chatham Resolution 90-19 to maintain the Government of Ontario refillable soft-drink beverage container requirements, and;

b) That copies of this resolution be circulated to the City of Chatham, all local MPP's and the Ontario Minister of the Environment.

E.M. Gill, P. Eng.
Acting Commissioner of Engineering

PJ/vb

cc: W.M. Carson, Chief Administrative Officer
cc: R.J. Whynott, Regional Chairman

CITY COUNCIL

Brian Hinkley Alderman Ward Three

Finance & Administration Committee
-Chairman

Keep Hamilton Clean Committee
-Chairman

Seniors Centre Feasibility Study
-Chairman

Harbour Task Force
-Chairman

Handbill Sub-Committee
-Chairman

Hamilton Municipal Retirement Fund
-Chairman

Hamilton Seniors Council
-Liason

Parks & Recreation Committee
-Member

Hamilton Non-Profit Housing
-Member

Regional Engineering Committee
-Member

Regional Economic & Planning Committee
-Member

Chairman's Environmental Advisory Committee
-Member

Hamilton-Wentworth Children's Aid Society
-Member

Recycled Paper

FILE NO.
LETTER NO.
JUL 0 6 1990

4 d)

READ BY
ANS. BY
FILED BY
INF
ENG.
ADMI

July 3, 1990

Mrs. T. Yull
497 Maple Avenue
Hamilton, Ontario
L8K 1K6

Dear Toby:

No you are not just a grown-up hippy idealist. You are right on target. The idea is supported by myself 100 percent plus. The difficulties however are real and unfortunately we do have people in our society who cause all kinds of problems when anyone attempts to do some good things for their community.

The letter from Mr. Don Heintz explains some of these logistical problems. Unfortunately there are logistical problems. If we can overcome those, I am with you 100 percent.

I also have a whole bunch of other ideas and everybody jumps all over me and tells me how these ideas cannot be implemented. I know that it is frustrating. It is very, very frustrating, especially when I see certain kinds of programs that are carried out in other communities. Hamilton is doing well, but boy oh boy, we can do so much more.

Thank you Toby for your letter. I will be pushing for this kind of idea, and there are many other suggestions. Keep it up. Maybe you could help us with the logistics.

Yours very truly,

Brian Hinkley
Alderman, Ward 3

rd

cc: Mr. D. Heintz
Project Maintenance Engineer
cc: Mr. V. Terluk, Supervisor
Solid Waste, Engineering Department
cc: Mr. J. Pavelka, Director
Public Works Department
cc: Mr. D. Lobo
Manager of Streets and Sanitation
[redacted] Secretary
Environmental Committee

THE CORPORATION OF THE CITY OF HAMILTON
City Hall, 71 Main Street West, Hamilton, Ontario L8N 3T4

1990 June 21

90-2000D

JUN 20 1990

Mrs. Toby Yull
497 Maple Avenue
Hamilton, Ontario
L8K 1K6

Dear Mrs. Yull

Re: Litter Containers & Recycling

Your letter dated 1990 May 28 has been passed on to me for response.

The idea of placing recycling containers next or near to the City's litter containers is an interesting suggestion that, in principle, has merit.

However, as you suggested in your letter, there are a significant number of problems that would have to be overcome before such a proposal could become a reality.

Some of these problems include:

(a) The Litter Container Service is a City service while all recycling is handled by the Region (in fact, through a Contractor, Hamilton-Wentworth Third Sector Employment Enterprises).

(b) The City's litter containers are collected by the City's crews on the night shift between midnight and 7:00 a.m. from four to seven nights per week. Recycling containers are collected once per week on the regular garbage day in any given area.

(c) One problem that was prevalent in the past with the litter containers was that they were frequently overturned and rolled/thrown out into the roadway - into the paths of buses and so on. The recycling containers that exist currently are a light weight plastic material which would, undoubtedly, find its way beneath the wheels of buses and other vehicles.

(d) Any recycling container placed out at this time would likely be collected only when Third Sector's vehicles pass the container on the garbage day in any given area. It is quite possible, even likely, that they would be filled on a daily basis and end up overflowing.

May 28.90

J.G. Pavelka
Director of Public Works

JUN 14 1990

Dear Joe —

I keep having this idea & finally am getting it on paper to send, in hopes that someone there will see some potential in it —

On walks in my neighbourhood (near Main & Ottawa) I invariably come home with tin cans & bottles I've picked up along the way. I put them in our blue box — sometimes 10, 12 items on a 20-minute walk!!

I've begun carrying a bag for the purpose, & my 3yr-old thinks it's a great "game."

Often we find glass bottles neatly placed on newspaper-sales boxes or beside City trash containers, & this leads me to believe that maybe we could get co-operation from people, if *blue* garbage containers were paired with regular outdoor trash cans; for bottles, cans & paper. (or maybe just bottles & cans?)

I'm sure there are logistics problems maybe compliance problems & perhaps ven outright sabotage/vandalism here there — but wouldn't it be a neat P.R. move to be leaders on his — to raise consciousness a ittle bit & take an active, not e-active role? Or am I just a grown-up hippie idealist??

Sincerely,
Toby Yule
(Mrs.)

497 Maple Ave
Hamilton L8K
547-2076

c ~~Ald. Hinkley's~~
Clean-up Committee

4 e)

Environmentalists a motley, combative bunch, Issacs says

CALGARY — Canadian environmental groups are mostly motley, left-leaning cliques whose combative approach does more harm to their cause than good, the former director of the Pollution Probe Foundation says.

In a no-holds-barred address to the Canadian Manufacturers' Association, Colin Isaacs said Canadian environmental groups should follow the example of their American counterparts and employ experts to prove their point rather than shouting their objectives at industry and government.

'More shouting'

"As a generalization, (Canadian) environmentalists are doing more shouting than development of pro-active policies that could be implemented by business and government," Mr. Isaacs told a news conference after his speech.

"More and more the public is looking to solutions to environmental problems, directions, strategies, programs. In order to maintain credibility, some components of the environmental movement need to develop those kinds of strategies."

Mr. Isaacs, an environmental policy consultant based in Ottawa, conceded there are also radical U.S. groups whose members lie in front of bulldozers and hug trees. But others employ professionals with "expertise equal to or greater than the professional expertise that exists in government or business."

These groups are taking an active part in shaping environmental policy because industry and government find it difficult to dispute the intelligently gathered evidence they present, said Mr. Isaacs.

By taking a confrontational approach, some Canadian environmentalists are allowing industry to continue polluting.

"It is a little easier for them to avoid the issue because if you're having a battle, you carry on with the battle and you don't have to do something," Mr. Isaacs said.

"When somebdy comes forward with a well-reasoned analysis of the environmental impact you are having, and proposes ways to reduce those impacts, it's a whole lot more difficult to avoid the challenge."

Mr. Isaacs brought nods of approval from several of the businessmen as he outlined seven environmental guidelines a company should employ.

These included naming a senior officer in charge of environmental issues; preparing an environmental policy statement and action plan; providing an environmental training program for workers; and monitoring and reporting environmental progress back to the board of directors each year.

In an earlier address, Nova Corp. chairman Bob Blair said federal fiscal policies like high interest rates and an overpriced dollar are crippling Canadian businesses.

Exchange rates

The business community is feeling the brunt of Ottawa's efforts to fight inflation, and high exchange rates make it difficult for exporters to compete in world markets.

Mr. Blair fears some companies might decide to forsake Canada and expand into the United States.

"At this time, Canadian business operations are working with particular handicaps of momentary policy in Canada," Mr. Blair said later.

From Canadian Press

By SUZANNE MORRISON
The Spectator

ORONTO — If you keep abu
our health, political econo
ohn Crispo thinks the health
ystem should stop patching
o.

He told the Ontario Me
ssociation's annual meeting
erday that he is becoming m
nd more intrigued with the
f saying, "If you don't look a
ourself, we'll give you one c
t a treatment that will solve y
elf-induced problem, but
on't get it again free."

At cocktail parties, Profe
rispo said, he's finding he's
nly one who hasn't had a h
ypass.

"In this corner are the doub
e triples and the quadruples
n the middle are people who
oming back for another rou
e said.

It happens becuase they k
oing what they've always d
eating, drinking and smoking
rugging themselves to de
What the devil do we give th
nother round for," asked P
Crispo, a professor of polit
economy at the University of
onto.

Believing that Ontario
anada are facing runaway m
are costs, Prof. Crispo s
mart-card technology could
wonders at containing medic
osts.

He believes there is a doubl
ripling, and quadrupling of
oring, drugging, and institutio
zing going on in health care.

Smart-card technology wo
top all that, he said, becaus
erson's entire medical rec
ould be contained in it.

This duplication would quic
top when doctors and pharm
ists realized they weren't gett
aid if they treated a patient
was given medication or exami
nly the week before.

Prof. Crispo said right-to
egislation should be enacted
ive people a variety of choices
eir medical care.

THE REGIONAL MUNICIPALITY
OF HAMILTON-WENTWORTH
REQUEST FOR PROPOSALS
REGIONAL AUDIT SERVICES

Proposals are invited from public accounting firms to perform audits leading to the expression of an opinion on the financial statements of the Regional Municipality, as well as other related certification work. The appointment would cover a five year term comprising 1989 and the four subsequent years.

Interested parties are required to submit a proposal outlining the firm's ability to carry out such work to

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1990

CHAIRMAN'S ADVISORY COMMITTEE ON ENVIRONMENTAL ISSUES

AGENDA

DATE: Thursday, September 13, 1990

TIME: 8:30 o'clock a.m.

PLACE: Committee Room, 15th Floor
Regional Offices

---

1. GENERAL

a) **Declaration of Interest** re: Municipal Conflict of Interest Act
b) **Minutes of Chairman's Advisory Committee on Environmental Issues Committee Meeting - August 9, 1990**

2. DELEGATIONS

2.1 H. McCaw; Environment Products Inc.

3. NEW BUSINESS

3.1 **Recommendations Resulting From an Independent Review of the Terraqua Report: An Evaluation of the Existing Environmental Monitoring Programs at Eight Closed Landfill Sites in the Region of Hamilton-Wentworth**

For the consideration of the Committee.

3.2 **Proposed Composter to be Built in the Town of Dundas on Regionally Owned Property Adjacent to the Dundas Transfer Station**

For the consideration of the Committee.

4. FOR THE INFORMATION OF THE COMMITTEE

a) Correspondence from Ted Mealing of Amstel Brewery, regarding their Recyclable Grizzly Beer Bottle

5. ADJOURNMENT

Sept. 13

1 (b

MINUTES OF THE CHAIRMAN'S ADVISORY COMMITTEE ON ENVIRONMENTAL ISSUES

The Chairman's Advisory Committee on Environmental Issues met at 8:30 a.m. on Thursday, August 9, 1990 in the Committee Room, 15th Floor, Ellen Fairclough Building, Hamilton.

Present:	Chairman (Councillor) J. Prentice Councillors G. Copps, B. Hinkley Prof. K. Murphy, Wm. Pedder, R. Baetz P. Muldoon, B. McHattie, B. Thompson, R. Steward, C. Katz Regional Chairman R. Whynott
Also Present:	P. Dunn, B. Goodger, D. Edwards, Dr. B. Gibson

1. GENERAL

a) **Declaration of Interest** re: Municipal Conflict of Interest Act: None

b) **Minutes of Chairman's Advisory Committee on Environmental Issues Meeting - July 12, 1990**

(Pedder/Copps)
Be adopted and received as amended.

It was noted that when the Terms of Reference were sent out that an extra page had been included, which referred to the original Terms of Reference.

Mr. McHattie requested that outstanding business from previous meetings be included in the Agenda.

It was indicated that there were three Boards of Education in Hamilton - Wentworth, and that our Terms of Reference required a staff member from the Hamilton Board. It was suggested that the Education Sub-Committee should have representation from the other Boards on its Committee. **CARRIED**

OTHER BUSINESS

Additional Funding for Windamere Basin Clean-up

Chairman Whynott requested that this Committee support the request of the Hamilton Harbour Commissioners for the additional $106,675.10, for the Region's share in completing the clean-up. It was noted that 95% of the work has been completed, to date.

Chairman Whynott indicated that the Region and City have refused to commit the final share because of land ownership. Chairman Whynott suggested that this is not part of the original agreement and it is a separate issue.

Mr. Muldoon felt that we should support the request, but he is concerned with the fact that contaminates are still flowing into the Basin from upstream and the Sewage Treatment Plant.

Mr. Steward indicated that the S.T.P. had been a problem in the past, but that the effluent from this source meets Ministry of Environment requirements.

Councillor Copps questioned the fact that the dredged material was only removed from the bottom and placed adjacent to the Basin behind dikes.

Councillor Hinkley indicated that the cleanup is the current issue here.

Prof. Murphy indicated that technically, the job should be finished and he also advised that the method being used has an expected lifetime of one hundred years.

(Katz/Pedder)
That the Chairman's Advisory Committee on Environmental Issues support the request of The Hamilton Harbour Commissioner for additional funds in the amount of $106,675.10, for the Region's share in the completion of the clean-up of the Windermere Basin. **CARRIED**

Councillor G. Copps, and Mr. Paul Muldoon OPPOSED.

A second motion was considered, but it was suggested that it be added to the original motion as a note.

NOTE: As a Committee, we strongly suggest that serious efforts be taken to reduce contaminates being discharged into the Windermere Basin.

2. DELEGATION

2.1 Spraying of Pesticides

The delegation was not present at the meeting. They will be asked if they would like to make a presentation at our meeting of September 13, 1990.

Ms. Baetz felt that the city should not be spraying City Parks with pesticides. Mrs. Baetz felt that the use of pesticides should be stopped.

Mr. Pedder advised that wild life is being affected by these sprays.

Mr. Steward advised that the Ministry has cut down on the use of pesticides.

It was suggested that a representative from the Public Works Department be invited to the next meeting to discuss this item.

(McHattie/Muldoon)
That this issue be referred to the Sub-Committee on Natural Areas.
CARRIED

3. NEW BUSINESS

3.1 Joint Staff Committee on Recycling Initiatives

a) That the City and Regional Administrative Committees be requested to strike a joint staff committee composed of employee representatives of the various strata of the organizations, including representation from the Purchasing Department to develop new policies and programs for the expanded use of products and services that contain the maximum level of post-consumer waste and/or recyclable content, without significantly affecting the intended use of the product or service;

b) That the joint staff committee report back to the Finance and Administration Committee with their recommendations.

Councillor Hinkley reported that a) and b), above, are already in place.

Mr. McHattie felt that we should be reducing and revising and not sending a memo to each person. He suggested putting a notice on the bulletin board.

(Baetz/Hinkley)
That a letter from the Secretary be sent to the Purchasing Department expressing this Committee's view on reducing and reusing.
CARRIED

4. FOR THE INFORMATION OF THE COMMITTEE

That the following items be received for information:

a) Correspondence from Rashne Baetz on the Region's need for a bike path connecting Ancaster and Dundas.

The Members were advised that the Conservation Authority has expressed an interest in acquiring portions of the CP Railway Property from Hamilton to Brantford, and Brantford to Simcoe, as a combination Pedestrian Path/Bikeway.

(Baetz/McHattie)
That the secretary send a letter indicating that this Committee supports the interest that the Hamilton Conservation Authority has in developing portions of the abandoned CP Rail line as a combination Pedestrian Path/Bikeway. **CARRIED**

(McHattie/Pedder)
That this item be received.

b) Newspaper article appearing in the Calgary Herald, June 21, 1990, "Mountain of compost is rotten to the core", from Councillor Drury.

c) Status of New York State Deposit Legislation.

Prof. Murphy is of the option that a deposit for all cans and bottles, whether refillable or not, is still the best way to eliminate this type of litter.

Councillor Hinkley indicated that the quotas on refillable bottles will be discussed at the AMO meeting.

Mr. Muldoon indicated that Amstel Brewery has changed to disposable stubby beer bottles.

(Hinkley/Muldoon)
That the secretary send a letter to Amstel Brewery on behalf of this Committee expressing our concerns to the stand taken by the company on the use of non-returnable bottles.

CARRIED

d) Correspondence from Councillor Hinkley, Mr. D. Heintz, and Mrs. T. Yull regarding "Litter Containers and Recycling".

Councillor Hinkley advised the members that in California, the recycling of cans, etc., is well received and practised.

The implementation of this type of system always appears difficult to begin.

Ms. Baetz asked Councillor Hinkley if the garbage trucks could not be built to pick up a variety of garbage, to include regulator garbage, recyclables and hazardous waste.

Councillor Hinkley advised that it is possible, but trucks that could pick up all these items would have to be specially designed, which would cause the cost to be very high.

Ms. Goodyer indicated that a Tender call is now out for including Household Hazardous Waste Disposal on a weekly basis.

e) Newspaper article appearing in The Spectator, June 8, 1990, "Environmentalists a motley, combative bunch, Issacs says".

OTHER BUSINESS

Mr. Pedder reported on his effort regarding hospital incinerators. He indicated that certain items are put into coloured bags, depending on their use and then they are disposed of. He advised that he was at the Mount Hamilton Cancer Clinic to see their incinerator, and that the incinerator had produced black smoke for approximately thirty seconds at one stage.

Prof. Murphy stated that Hazardous Waste at McMaster University is strictly controlled.

Mr. McHattie requested someone from the Ministry of Environment to attend one of our meetings to discuss incinerators. Mr. Steward will make arrangements for a staff person to attend a future meeting.

Councillor Copps requested that Mr. Steward provide a report on the Mount Hamilton Hospital Incinerator.

Mr. Muldoon advised that the Terms of Reference for the Sub-Committee on Environmental Goals would be ready for our September meeting.

Mr. McHattie advised that the Terms of Reference for the Sub-Committee on Natural Areas would be ready for our September meeting.

Mr. Katz advised that the Terms of Reference for the Sub-Committee on Air Pollution would be ready for our September meeting.

Mr. Thompson advised that the Terms of Reference for the Sub-Committee on Energy would be ready for our September meeting.

Ms. Baetz has completed the Terms of Reference for her Sub-Committee (copy attached).

Under 3 c) - Former Landfill Sites

NOTE: That Sub-Committee recommendations on former landfill sites will be submitted at the September meeting. It is requested that any recommendations made by the Sub-committee, be taken into consideration before the final revised monitoring program is put into place.

Ms. Baetz asked Ms. Edwards, if Mr. Tapley had been contacted with regard to the CFC's issues.

Ms. Edwards informed the Committee that Mr. Tapley had attended a meeting.

Ms. Edwards indicated that they were reviewing the policy in connection with Regional Facilities.

Dr. Gibson explained what was happening with respect to the By-Law on CFC's.

5. ADJOURNMENT

On Motion (**Murphy/Copps**) the meeting adjourned at 10:45 p.m.

CARRIED

____
Chairman

____
Secretary

2.1

Hebbard McCaw
Environment Products Inc.

143 Melrose st.
Hamilton Ont.
L8L 6X5

Indoor Home Compost Unit

100% pine construction $\overset{w}{2}' \times \overset{L}{3}' \times \overset{D}{1}'$

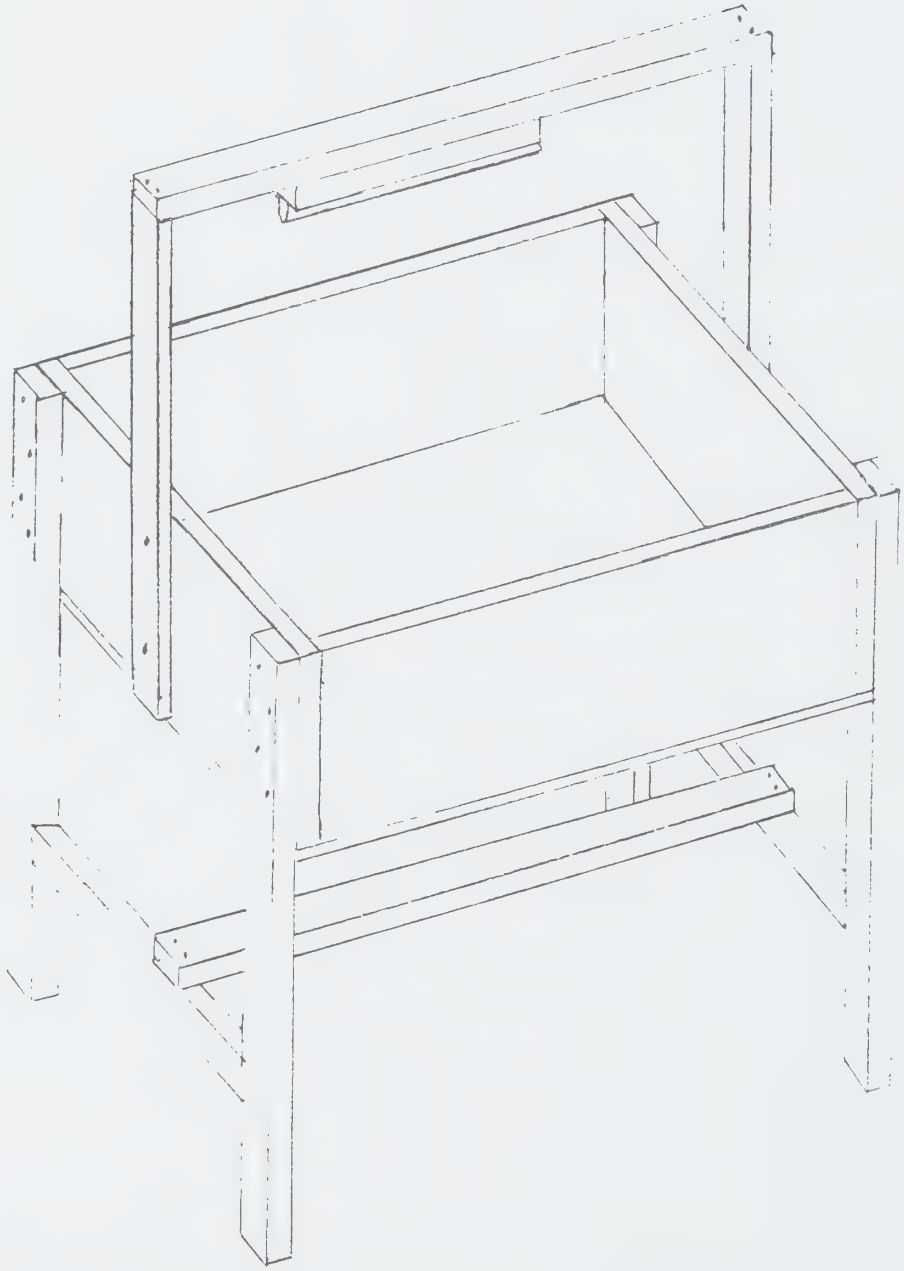
Stands 3' in height, with an 18" flourescen light fixture mounted above, on a bracket

This unit is designed to work indoors, in a basement, solarium, or greenhouse, also many businesses such as restraunts, or any establishment with a caffeteria can order an custom built unit to suit their needs.

This unit is very unique in the way it works The compost bin is first filled with composted manure (completely odourless) then redworms are introduced. The unit is now redy for use. Simply place all organic waste, such as salad waste, or fruit waste in the manure, the redworms devour it, and turn it into a rich mulch for the garden, lawn, or any house plants.

5 yr. guarantee on construction
lifetime of satisfaction

D. C. Hebbard



3.1

RECOMMENDATIONS RESULTING FROM AN INDEPENDENT REVIEW OF THE TERRAQUA REPORT: An Evaluation of the Existing Environmental Monitoring Programs at Eight Closed Landfill Sites in the Region of Hamilton Wentworth

Prepared for: Chairman's Advisory Committee on Environmental Issues (CACEI)

Prepared by: Solid Waste Subcommittee (SWS) of CACEI:

1. Rashné Baetz, Environmental Engineer, rep. of Conserver Society of Hamilton & District
2. Linda Varangu, Manager, Ontario Waste Exchange & Supervisor, Waste Reduction Centre, ORTECH
3. Craig Wardlaw, Head, Waste Management & Transportation of Dangerous Goods, Environment Canada

Date Submitted: September 13, 1990

BACKGROUND

The Region of Hamilton Wentworth, in 1974, assumed operational responsibility for ten landfill sites throughout the Region which were previously under local government jurisdiction. After the landfills were closed, their ownership was returned to area municipalities. However, the Region had to assume full responsibility for environmental monitoring and any remedial action necessary at the ten closed sites.

The existing environmental monitoring program went into effect in 1981, and was prepared jointly by Regional staff and Ministry of the Environment (MOE) officials. In 1988, MOE asked the Region to review the environmental monitoring program. A consultant, Terraqua Investigations Ltd., was retained by the Region to carry out this review for eight of the sites.

The Terraqua findings and proposed new program were summarized by the Region in Table 1. In April 1990, the Engineering Department was authorized to submit this report to MOE for review.

The eight sites covered in the Terraqua report are:

1. Binbrook (BB)
2. Glanford (GL)
3. Brampton (BR)
4. West Hamilton (WH)
5. Dundas (DU)
6. Stoney Creek (SC)
7. Ancaster (AN)
8. Beverly (BV)

NATURE OF LEACHATE

Refuse in landfills undergoes biological and chemical decomposition, releasing matter that is removed by precipitation percolating through the landfill. The resulting contaminated liquid is called leachate. Typically, in old landfill sites that do not have a liner and leachate collection system, the leachate eventually makes its way to the ground water and/or surface water. How much its strength attenuates by the time it reaches a receiving water body, depends on the hydrogeology of the site.

Leachate is generally of greater concentration than domestic sewage in terms of toxic organics and heavy metals. Leachate is highly variable in quality, varying not only from site to site, but also from time to time at one landfill. Leachate quality varies due to differences in seasonal hydrology and microbiological activity (Steiner, 1980), age of the landfill, and the chemical nature of wastes accepted at the landfill (Keenan et al, 1984). The significant variability of leachate quality, even from month to month, was exemplified in a study on landfill leachate (Sidhwa, 1982). Leachate strength represented by chemical oxygen demand (COD) was measured over a six month period, with 21 sampling days. The COD was 4000 mg/L in the first month, averaged 2000 mg/L during the next four months, and peaked at 9000mg/l in the last month.

SOLID WASTE SUBCOMMITTEE FINDINGS

Taking into consideration that leachate strength is highly variable and that leachate will end up in surface or ground water, it was concluded that the monitoring program proposed in the Terraqua report is not sufficiently comprehensive, and needs to be augmented in order to develop more reliable estimates of the pollution potential of leachate from the Region's closed landfill sites. The proposal to discontinue monitoring at three of the eight sites is premature, as such a decision should be based on conclusions drawn from more comprehensive sampling and analysis.

Undertaking a more comprehensive environmental monitoring program is extremely important for the protection of water quality of creeks, rivers, the lake and drinking water wells that are close to the various sites.

RECOMMENDATIONS OF THE SOLID WASTE SUBCOMMITTEE

The following are recommendations of the SWS on various aspects of the environmental monitoring program. Pertinent information on the sites that was available is summarized in Table 2. Before a revised monitoring program is put in place, it would be advisable to tabulate such information and any additional historic information that is available.

1. TESTING FREQUENCY (refer to Table 1)

Existing Program

4 sites (BB, GL, BR, SC): tested once annually
3 sites (WH, DU, BV) : tested twice annually
1 site (AN) : tested three times annually

Terraqua's Proposed Program

3 sites (BB, GL, SC): discontinue sampling -visual inspection only
3 sites (BR, BV, AN): test once annually
2 sites (DU, WH) : test twice annually

Due to the high degree of variability in leachate quality over time, annual or semi-annual sampling generally will not provide representative data on the actual water quality.

--> Recommendation: Increase the frequency of sampling, at all sites, to monthly for one year. This would give a better profile of seasonal fluctuations of leachate strength and be a more sound basis from which to make decisions about future sampling strategy. Continue this frequency (once per month) if results indicate a potential problem.

2. SAMPLING SOURCES (refer to Table 1)

Existing Program

At six of the eight sites, only surface water samples are taken. The other two sites (AN, BV) have leachate and ground water sampled as well.

Terraqua's Proposed Program

Of the six sites with surface water sampling, the proposed program adds only collection of one leachate sample at one of the six sites (WH).

--> Recommendation: To get a more complete picture of where the leachate is going and what is in it, samples of leachate, surface water, and ground water should be taken where appropriate. (Note: weather conditions should be noted when sampling).

i) Leachate- taking actual leachate samples, where feasible, would allow a better assessment of what parameters to focus on. For example, a site where chromium electroplating waste has been disposed of would most likely produce leachate high in chromium. Therefore, when analyzing surface and ground water samples, it would be essential to analyze for chromium.

ii) Surface Water (upstream and downstream of site)- to obtain a representative sample, it is necessary to obtain several samples at each location (5-6 samples, or the appropriate number dictated by stream sampling protocol), and mix these samples together to get a composite sample which would then be analyzed (However, for volatile organics analysis, individual samples should be tested to prevent volatilization from compositing).

iii) Groundwater- groundwater samples should also be obtained, where appropriate, as all the leachate may not be flowing to the surface water. One sample upgradient and two to three samples downgradient of the site is recommended. Potentially impacted drinking water wells should also be tested where they exist.

- When necessary, monitoring wells should be installed where they do not already exist.

- Sampling locations should be chosen carefully to ensure that they are truly upstream and downstream of the site, as non-representative locations at some of the sites in the existing program have produced unreliable results.

- A sound quality assurance/quality control (QA/QC) program, to ensure the quality of the lab results, should be devised with replicate (split) samples, duplicate (blind) samples, etc.

3. ANALYSIS

The existing analytical program appears somewhat arbitrary. At most sites, the extent of the analysis proposed is to remain the same or testing is to be discontinued altogether. Test parameters in the various MOE groups are listed in Table 3.

Existing Program
3 sites (BB, GL, DU): Group S-B; conventional parameters, no metals
3 sites (BR, WH, BV): Group S-D; conventional parameters, metals
1 site (SC): Group G-D; conventional parameters (no DOC & phenols), metals
1 site (AN): only 4 parameters; conductivity, chloride, hardness, alkalinity

Terraqua's Proposed Program

3 sites (BB, GL, SC): discontinue
1 site (DU) : Group S-B; conventional parameters, no metals (same)
2 sites (BR, WH) : Group S-D; conventional parameters, metals (same)
1 site (AN) : some conventional parameters, no BOD, COD, N-species
1 site (BV) : add priority pollutants

--> Recommendation:

i) Conventional Parameters- the most comprehensive list of conventional parameters appears to be MOE Group S-D which should be used for all sites for comparibility. All metals should be included on this list as a metal scan provides the whole list of metals for the same price as a subset of metals.

ii) Toxic or "Priority" Pollutants (U.S. EPA)- due to the uncertainty regarding the types of wastes disposed of in old landfill sites, it would be advisable to increase the scope of analysis to include priority pollutants. The list of 129 toxic or priority pollutants, which include a broad range of industrial pollutants is shown in Table 4. Several options exist to incorporate priority pollutants analysis:

1. include the priority pollutants in the list of analyses for all samples if the cost differential between that and doing conventional pollutants alone is justifiable.

2. include priority pollutants in the list of analysis two times per year for each site.

3. after two to three months of analyzing for conventional parameters, if significant contaminant migration appears to be taking place, samples should also be analyzed for priority pollutants.

- At sites where contaminant migration is currently known or even suspected, priority pollutants should be analyzed at least quarterly.

4. QUANTITY OF LEACHATE

--> Recommendation: in addition to determining the quality of leachate it is important to estimate the quantity of leachate, and consequently, the amount of contaminants entering the receiving water body. A rough estimate could be done with knowledge of the precipitation rate, the area of the site, and assumptions regarding the percent of infiltration of precipitation into the site (10-40%).

5. REMEDIAL ACTION

--> Recommendation: Remedial action such as collection and treatment of leachate, capping, or excavation should be implemented if found necessary based on results of more comprehensive testing.

6. OTHER CLOSED LANDFILL SITES

The Region inherited ten closed landfill sites. The Terraqua report covers eight of the ten sites. The two sites not covered by the report are the Upper Ottawa site in Hamilton and the Edgewood site in Flamborough.

i) Upper Ottawa site- Regional staff has indicated that due to more concerns about this site in the past, a Health Committee was set up which made specific recommendations on this site. More information is necessary for the solid waste subcommittee to comment on this site. An observation based on monitoring data that was provided for this site was that the analyses did not include priority pollutants.

--> Recommendation: if this observation is correct, and there has been significant concern about this site, priority pollutant analysis should be included in the list of test parameters.

ii) Edgewood Site in Flamborough- Regional staff indicated this site was closed in 1974 and that, besides grading specifications, MOE did not require monitoring by the Region.

--> Recommendation: in addition to the obvious reasons of protecting the environment and human health, the Region should consider the potential liability issue that could result from not performing any monitoring whatsoever at a closed landfill site. It is necessary to reevaluate this decision.

7. ADDITIONAL STAFF

Leachate can contaminate ground water and/or surface water. Methane gas, also produced by landfills, can pose an explosion hazard for nearby buildings. A comprehensive sampling and monitoring program needs to be implemented as soon as possible to protect the environment from potential contamination. The Region has full responsibility for environmental monitoring and remedial action necessary at ten closed landfill sites. However, it is evident that the Region currently lacks the manpower to sufficiently fulfill this very important responsibility.

--> Recommendation: In order to implement a sound and comprehensive monitoring program, including the evaluation of program results and setting up any remedial action required, it is essential to have dedicated staff available to focus on landfill concerns. As is currently being done in other Regions (e.g., Peel, Waterloo, Metro Toronto), it would be very worthwhile for the Region to hire a qualified individual who is familiar with landfills and the necessary suport staff (field technician) to set up and operate a comprehensive monitoring program for closed landfill sites. Such expertise would also benefit the monitoring and evaluation of data from the existing Glanbrook landfill site.

8. TIME FRAME

--> Recommendation: It is very important that the Region be expedient in improving the environmental monitoring program. The longer action on this issue is delayed, the greater the potential for contaminants to migrate to the ground water. The continuing contaminant load to surface waters is also of great concern as it will ultimately impact the Region's drinking water supply. The increased cost, of a more comprehensive program and additional staff dedicated to landfill concerns, is very small compared to the prohibitive cost of dealing with contaminated ground and surface water resources.

REFERENCES

1. Keenan, J. et al, Landfill Leachate Treatment, J.WPCF, v.56:1, Jan. 1984
2. Steiner, R., GROWS Landfill Experiments, Solid Waste Mgmt., Sept. 1980
3. Sidhwa, R., Treatment of Landfill Leachate by the Anaerobic Filter, Master's thesis, Univ. of Toronto, 1982.

APPENDIX A

TABLE 1

ENVIRONMENTAL MONITORING PROGRAM FOR FORMER LANDFILL SITES IN THE REGION

	EXISTING PROGRAM			PROPOSED PROGRAM	
SITE	NO. & TYPE OF SAMPLES	TESTING FREQUENCY	TERRAQUA RECOMMENDATIONS	NO. & TYPE OF SAMPLES	TESTING FREQUENCY
① Binbrook	3 surface water samples	once annually	discontinue	Visual inspection for new seeps and erosion	once annually
② Glanford	3 surface water samples	once annually	discontinue	Visual inspection for new quantity of seepage and erosion	once annually
③ Brampton (Hamilton)	2 surface water samples	once annually	continue & enhance testing	2 surface water samples.	once annually for three years
				Relocate both sampling locations.	increase testing parameters
④ West Hamilton	2 surface water samples	twice annually	continue & enhance testing	Collect sample from the central culvert.	twice annually
				Relocate SW #4 southerly.	
				Collect leachate Sample.	twice annually
⑤ Dundas Site	3 surface water samples	twice annually	continue & enhance testing	3 Surface water samples. Increase to full range of parameters.	For the next two years, twice annually (Spring & Fall). Use same laboratory for the test. Review findings. If no change in trends, discontinue monitoring.

TABLE 1

2 of 2

APPENDIX A

	EXISTING PROGRAM			PROPOSED PROGRAM	
SITE	**NO. & TYPE OF SAMPLES**	**TESTING FREQUENCY**	**TERRAQUA RECOMMENDATIONS**	**NO. & TYPE OF SAMPLES**	**TESTING FREQUENCY**
⑥ Stoney Creek	6 surface water samples	once annually	discontinue	Conduct a visual inspection of the site to determine any physical changes and assess need for reimplementation of the testing program.	once annually
⑦ Ancaster	6 surface water samples	three times annually	Continue and enhance testing	6 surface water samples, 1 leachate sample	once annually
	6 piezometer samples		Reduce sampling frequency	BHs 9, 11, 13 & 15	once every two years
	6 standpipe samples		Discontinue sampling	BHs 7, 10, 12	
	1 leachate (M.H.)		install monitoring wells	3 ground water samples	once per year for 2 years, and re-evaluate at that time
⑧ Beverly	5 Monitoring well samples	twice annually	Continue and enhance testing	5 monitoring wells 5 private wells 2 surface water	twice annually
	2 Surface water samples			establish a geophysical plume delineation program	
	5 Private well samples			expand parameters for BH3-II	

TABLE 2 - DESCRIPTION OF CLOSED LANDFILL SITES IN REGION (tabulated using info. in Terraqua report)

SITE	SIZE (hectares)	-YEAR CLOSED -(No. yrs. oper.)	WASTES DISPOSED	COVER	GEOLOGY	PROXIMITY to WATER BODY	LEACHATE	NOTES (S.W.S.)
. Binbrook (BB)	0.4 [1acre]	- 1980 - (?)	?	? - grassy vegetation present	-15m of silt+clay	- 35m to Welland River tributary	-No collection -seeps from toe of landfill	- water quality not noticeably affected. - limited data base (sampled only 5 times)
2. Glanford (GL)	1.2 [3acres]	~1980 - (?)	?	?	-12m of silt+clay - deposits of silt, clay, sand gravel	- close to school well (25m deep) -100m to Welland River	-No collection	- ocassional elevated levels of some parameters - limited data base (sampled only 4 times)
3. Brampton (BR)	5 [12acres]	-1974 -(?)	?	?	- sand	- bordering Redhill Creek - 200m to Lake Ontario	-No collection -seeps flow to swampy area & Redhill Crk.	- "upstream" sample not really upstream - but near outflow of LF (will change) - downstream - too far down (will chg.) - ∴ can't tell true upstream & downstream Water quality - Ammonia, chromium 5x limit @ both locations
1. West Hamilton (WH)	20 [49acres]	- 1974 -(23 yrs) [spec 90/03/15]	55% household 35% commercial 10% industrial (Spec. 90/03/15)	-3m foundry sand (J. Milton)	- gravel, sand, silt & clay	- bordering Chedoke Creek	- No collection	- Downstream sample collected too far down (from canal) subject to much mixing + dilution; Therefore - not representative of levels in Chedoke creek downgrad. from site; will change - increasing trends - some parameters
5. Dundas (DU)	0.75 [2acres]	- 1975 -(?)	?	- cover present but cracked - vegetation non-existent to sparse	gravel	- 50m to Borer's Creek	- No collection	- inconsistent sampling frequency, time of year sampled, number of labs used for analysis - some contamin. may seep into gravelly overburden & flow toward public vegetable plots + West Pond
6. Stoney Creek (SC)	2.8 [7acres]	-1979 -(?)	?	-1m foundry sand + ~½m of clay	-3m of siltyclay -fissures noted -sand+gravel lens	-near private wells -(?)m to stream	- No collection - seeps from toe of landfill	- 3 well nests on + off-site showed contaminated groundwater in 1982 + 1988 - Phenol: 4280mg/L ?? - Based on 1 sampling day in 198. of one remaining well nest, Terraqua concluded that g.w. quality improved. ??
7. Ancaster (AN)	10 [25acres]	- 1982 - (?)	?	?	- silt & fine sand - minor amt. of clay	(?)m to Big Creek	- Yes, collection system	- offsite pond near LF was impacted by leachate despite collection system - limited scope of test parameters. (only 4) - will be increased
8. Beverly (BV)	1.4 [4acres]	- 1980 -(10-15 yrs)	?	?	-fractured dolostone (was gravel pit) -sandy	-near private wells - near pond	- No collection	- 1 private well is contaminated - Results indicate contaminant plume from LF is present in the groundwater

Table 3 REGIONAL LANDFILL SITE TEST PARAMETERS

Group S-B	Group S-D	Group G-D
conductivity	conductivity	conductivity
pH		
hardness	hardness	hardness
sulphate	sulphate	sulphate
chloride	chloride	chloride
TKN	TKN	
nitrite	nitrite	nitrite
nitrate	nitrate	nitrate
ammonia	ammonia	ammonia
phosphorus	phosphorus	phosphorus
TDS	TDS	TDS
turbidity		
DO		
COD	COD	COD
BOD	BOD	BOD
	DOC	
phenols	phenols	
		alkalinity
	Ca	Ca
	Mg	Mg
	Na	Na
	K	K
	Cr	Cr
	Cu	Cu
Fe	Fe	Fe
	Ni	Ni
	Zn	Zn
		Pb
		Mn

TABLE 4

Pollutants listed in Part C of Section V of the NPDES permit application (PRIORITY POLLUTANTS)

Metals, cyanide and total phenols
- Antimony
- Arsenic
- Beryllium
- Cadmium
- Chromium
- Copper
- Lead
- Mercury
- Nickel
- Selenium
- Silver
- Thallium
- Zinc
- Cyanide
- Phenols, total

Dioxin
- 2,3,7,8-Tetrachlorodibenzo-*p*-dioxin

GC/MS fraction—volatile compounds
(purgeable)
- Acrolein
- Acrylonitrile
- Benzene
- *bis*(Chloromethyl)ether
- Bromoform
- Carbon tetrachloride
- Chlorobenzene
- Chlorodibromomethane
- Chloroethane
- 2-Chloroethylvinyl ether
- Chloroform
- Dichlorobromomethane
- Dichlorodifluoromethane
- 1,1-Dichloroethane
- 1,2-Dichloroethane
- 1,1-Dichloroethylene
- 1,2-Dichloropropane
- 1,2-Dichloropropylene
- Ethylbenzene
- Methyl bromide
- Methyl chloride
- Methylene chloride
- 1,1,2,2-Tetrachloroethane
- Tetrachloroethylene
- Toluene
- 1,2-*trans*-Dichloroethylene
- 1,1,1-Trichloroethane
- 1,1,2-Trichloroethane
- Trichloroethylene
- Trichlorofluoromethane
- Vinyl chloride

GC/MS fraction—acid compounds
(acid extractable)
- 2-Chlorophenol
- 2,4-Dichlorophenol
- 2,4-Dimethylphenol
- 4,6-Dinitro-*o*-cresol
- 2,4-Dinitrophenol
- 2-Nitrophenol
- 4-Nitrophenol
- *p*-Chloro-*m*-cresol
- Pentachlorophenol
- Phenol
- 2,4,6-Trichlorophenol

GC/MS fraction—base/neutral compounds
(base/neutral extractable)
- Acenaphthene
- Acenaphthylene
- Anthracene
- Benzidine
- Benz[*a*]anthracene
- Benzo[*a*]pyrene
- Benzo[*b*]fluoranthene
- Benzo[*g,h,i*]perylene
- Benzo[*k*]fluoranthene
- *bis*(2-Chloroethoxy)methane
- *bis*(2-Chloroethyl)ether
- *bis*(2-Chloro-*iso*-propyl)ether
- *bis*(2-Ethylhexyl)phthalate
- 4-Bromophenyl phenyl ether
- Butyl benzyl phthalate
- 2-Chloronaphthalene
- 4-Chlorophenyl phenyl ether
- Chrysene
- Dibenz[*a,h*]anthracene
- 1,2-Dichlorobenzene
- 1,3-Dichlorobenzene
- 1,4-Dichlorobenzene
- 3,3'-Dichlorobenzidine
- Diethyl phthalate
- Dimethyl phthalate
- Di-*n*-butyl phthalate
- 2,4-Dinitrotoluene
- 2,6-Dinitrotoluene
- Di-*n*-octyl phthalate
- 1,2-Diphenylhydrazine
- Fluoranthene
- Fluorene
- Hexachlorobenzene
- Hexachlorobutadiene
- Hexachlorocyclopentadiene
- Hexachlorethane
- Indeno[1,2,3-*c,d*]pyrene
- Isophorone
- Naphthalene
- Nitrobenzene
- *n*-Nitrosodimethylamine
- *n*-Nitrosodi-*n*-propylamine
- *n*-Nitrosodiphenylamine
- Phenanthrene
- Pyrene
- 1,2,4-Trichlorobenzene

GC/MS fraction—pesticides and polychlorinated biphenyls (PCBs)
- Aldrin
- α-BHC*
- β-BHC*
- γ-BHC*
- δ-BHC*
- Chlordane
- 4,4'-DDT†
- 4,4'-DDE‡
- 4,4'-DDD§
- Dieldrin
- α-Endosulfan
- β-Endosulfan
- Endosulfan sulfate
- Endrin
- Endrin aldehyde
- Heptachlor
- Heptachlor epoxide
- PCB-1242
- PCB-1254
- PCB-1221
- PCB-1232
- PCB-1248
- PCB-1260
- PCB-1016
- Toxaphene

*BHC = Benzene hexachloride
†DDT = Dichlorodiphenyltrichloroethane
‡DDE = Dichlorodiphenyldichloroethylene
§DDD = Dichlorodiphenyldichloroethane

CHEMICAL ENGINEERING APRIL 30, 1984

3.2

Liz Crozier-Organ
12B Matilda St. N.
Dundas, Ontario
L9H 2Y8

August 15, 1990

Regional Municipality of Hamilton-Wentworth
Office of the Clerk
P.O. Box 910
119 King Street West
Hamilton, Ontario
L8N 3V9

Attention: Mr. Jack Ramsey, Legislative Co-Ordinator

Dear Mr. Ramsey:

Re: Proposed Composter to Be Built in the Town of Dundas on Regionally-Owned Property Adjacent to the Dundas Transfer Station

I am writing out of concern for a marsh that is located on the same property that the above mentioned composter is to be built; and I am requesting that this matter be put on the agenda for the September meeting of the Regional Chairman's Environmental Advisory Committee.

While the composter is prima facie a good idea insofar that it means a reduction in the amount of garbage going into landfill sites, I am concerned about the possible detrimental effect this operation will have on the delicate ecological balance of the marsh.

Enclosed is a biological survey completed by Christine Bishop of the Hamilton Naturalists Club, which shows that this marsh supports a wide diversity of life. It serves as a quiet corner which provides native species of animals with a secluded nurturing environment. As such, it provides a second sanctuary in conjunction with Cootes Paradise.

Also enclosed is a copy of a letter from Christine Bishop outlining her argument for the preservation and enhancement of this marsh.

Although I understand that the composter is to be built near the Transfer Station, I would appreciate a copy of a map showing its location.

. . . 2

I am concerned as to the impact this composter will have on the marsh as there is a possibility that hazardous materials may result from its operation, especially in view of the fact that sewage sludge will be used in its operation, and commercial and industrial waste may also be accepted. I suggest that further research be done before building this composter near the marsh to ensure that its operation does not have a deleterious effect on this important natural habitat.

I would appreciate a reply from you informing me whether this matter has been placed on the Committee's September agenda and the date and place of the meeting.

Yours truly,

Liz Crozier-Organ

cc: Brian McHattie
Hamilton Naturalist's Club

HAMILTON NATURALISTS' CLUB

Postal Station E, Box 5182
HAMILTON, ONTARIO L8S 4L3

June 30 1990

Re: Region-owned lands near the Olympic Drive waste transfer site

The following is list of breeding birds, amphibians and reptiles mammals and botanical species found on June 9 1990 in the wetlands located at the above mentioned site:

Breeding Birds

	Number
Sora	1
Willow Flycatcher	3
Swamp Sparrow	1
Common Yellowthroat	1
Yellow Warbler	4
Red-winged Blackbird	6
Black-billed Cuckoo	1
Northern Oriole	1
Warbling Vireo	2
Song Sparrow	3
Eastern Kingbird	3
Indigo Bunting	1
Killdeer	3
Canada Goose	-several families

Reptiles

Painted Turtle	6
Snapping Turtle	1 nesting

Amphibians

Green Frog	2
Leopard Frog	2

Hamilton Naturalists' Club is a non-profit organization dedicated to the study, appreciation, and conservation of our wild plants and animals.

HAMILTON NATURALISTS' CLUB

Postal Station E, Box 5182
HAMILTON, ONTARIO L8S 4L3

Mammals

Raccoon	1
Muskrat	1

Aquatic_Plant.

Scirpus sp. (Rush sp.) community
Juncus sp. (Sedge sp.) community
Typha latifolia (Cattail sp.)
Typha angustifolia (Cattail sp.)

HAMILTON NATURALISTS' CLUB

Postal Station E, Box 5182
HAMILTON, ONTARIO L8S 4L3

This wetland site could be a valuable asset to the Dundas community. In its present state, the pond is being impacted by garbage such as tires and concrete blocks which litter its shoreline, and fill from construction activities. Despite these impacts, it remains a very productive wetland as evidenced by the above list of biotic contents noted at the site in just one visit. This does not include any migratory bird actiivty which is likely to occur there in the spring and fall. These types of small wetlands are an island of green and an attractive place for migrant birds among our many urban areas in the Golden Horseshoe. The presence of emergent plants, i.e. sedge and rush communities, cattail sp., is very special because this type of vegetation is lacking in most of the shoreline wetlands of Lake Ontario and Hamilton Harbour due to the destructive activities of carp, and sediment erosion. In fact, these types of plants will be welcome and encouraged in any future wetland rehabilitation efforts in Cootes Paradise.

This wetland must not only be preserved, but has great potential as an educational tool for the public and students in elementary and high school. It is easily accessible, and contains a significant biological community within minutes of Dundas homes. I believe it is an ideal site for the city or region to provide a couple of nature interpretation signs, to enhance the shoreline (!), and perhaps, place a small viewing platform near the baseball field. Our club would be very interested in participating in a co-operative effort with the region or city in this regard. I believe that the site can and will attract people to it but if it is ignored, and eroded inch by inch by fill it will be a sad loss to Dundas. Few towns still possess these types of wetlands so close to their community.

Yours sincerely,

Christine Bishop
Conservation Committee

Info Ca.

AMSTEL BREWERY
CANADA LIMITED

August 24, 1990

Mr. J. Ramsay
Legislative Co-ordinator
Committee on Environmental Issues
The Regional Municipality of Hamilton-Wentworth
119 King Street West
15th Floor
Hamilton, Ontario
L8N 3V9

Dear Mr. Ramsay,

In your letter to me it seems you are using different terms interchangeably leading me to believe you do not understand how the new Grizzly bottle is actually handled!

First of all, the bottles are 100% returnable to the BRI for refund (just like every other 12 pack of beer sold in the (province).

Given industry standards we expect a 97-98% return rate.

These bottles are recycled in Milton by Consumers Glass, "in this time of recycling." For full background information, I have attached a fact sheet outlining several environmental issues we took into account.

Please read this fact sheet and make your Committee aware of our responsible activity.

If you have any questions, please contact me to discuss.

Sincerely,

AMSTEL BREWERY CANADA LIMITED

Ted Mealing

TED MEALING
Marketing Manager

P.S. I am curious why we were not called or consulted for verification or input on the issue!

RECEIVED
AUG 28 1990
REGIONAL CLERK'S OFFICE

/lr

AMSTEL BREWERY
CANADA LIMITED

August 8, 1990

The Editor
Hamilton Spectator
44 Frid Street
Hamilton, Ontario
L8N 3G3

Dear Sir,

RE "UPROAR OF STUBBIE"

I would like to take the opportunity to present the complete facts regarding the new Grizzly 300 ml stay cool bottle and package.

Mr. E. McGuinness used many of my quotes out of context creating misleading comparisons and he made several factual errors in his article.

I respect the motives of both Messrs. McGuinness and McRobert (of Pollution Probe), however, I would like equal opportunity to present our reasoning and correct the errors.

The environment is a primary issue in all of our activities. To imply otherwise is misleading.

The new Grizzly actually results in a lower, not higher, environmental cost than existing 12 pack bottle cartons.

The reasons are as follows:

* All components of the new package are recycleable.

* The volume of material is reduced to 20% of standard Ontario 12 packs.

* Plastic reinforcing straps are not used and there is not any use of hot glue in the new carton.

* The glass bottle is returned to Brewers Retail for refund and then sent to Amstel. From Amstel it goes to Consumers Glass in Milton to be recycled. (a Canadian made bottle not American as stated by McGuinness.)

The plastishield is recycled separately from the bottle (and does not contain CFC's). It is vacuum collected at point of crushing for recycling.

The cardboard case is recycled along with the other brewery beer cartons.

201 Burlington St. E., Hamilton Ontario L8L 4H2 Tel. (416) 523-1400 Fax (416) 523-6564

AMSTEL BREWERY

The new Grizzly 12 pack is very much in support of and a part of the closed deposit-refund system as opposed to "meddling" with this successful system. The consumer pays a .10¢/bottle deposit on the 12 pack and receives their refund when the empties are returned! Just like all other 12 packs!

The smaller lighter 300 ml bottle actually results in reduced fuel usage in shipping (vs the larger, heavier "long neck" bottles).

The recycling of the Grizzly bottle uses only 10% of the water used to wash existing 341 ml bottles.

There is no need to use bottle cleaning chemicals.

There is no usage of heat energy for the cleaning and rinsing of bottles.

These energy savings are the relevant comparisons to the energy expended in resmelting the bottle each time, and likely result in net lower energy usage.

Finally, Mr. McGuinness quoted prices that were incorrect. The new Grizzly 12 pack is $10.60 including deposit, (not $10.30) and existing 12 packs of 341 ml bottles are $12.90 (not $12.60). This is a lower cost per ml. The reduced price is not just a result of the smaller bottle.

Mr. McGuinness, yes .. "there is a business to run and marketing is an issue," BUT NOT at a cost to the environment!

As evidenced by the above mentioned facts, the new Grizzly is not "a disastrous precedent nor is it "absurd and totally illogical." Quite the contrary, wouldn't you say.

Yours truly,

AMSTEL BREWERY CANADA LIMITED

TED MEALING
Marketing Manager

/lr

Notice is given that the REFERENCE material will not be reproduced. Please RETAIN FOR REGIONAL COUNCIL

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GOVERNMENT DOCUMENTS

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CHAIRMAN'S ADVISORY COMMITTEE ON ENVIRONMENTAL ISSUES

AGENDA

DATE: Friday, October 12, 1990

TIME: 1:00 o'clock p.m.

PLACE: Committee Room, 15th Floor
Regional Offices

---

1. GENERAL

a) **Declaration of Interest** re: Municipal Conflict of Interest Act

b) **Minutes of Chairman's Advisory Committee on Environmental Issues Committee Meeting - August 9, 1990**

c) **Secretary's Report of the Chairman's Advisory Committee on Environmental Issues Committee Meeting - September 13, 1990**

2. NEW BUSINESS

2.1 Appoint to the Chairman's Advisory Committee on Environmental Issues

a) That Mr. Ben Vandebrug, General Manager, of the Conservation Authority, be appointed the staff representative, to the Chairman's Advisory Committee on Environmental Issues as previously endorsed in principle at the Regional Council Meeting, July 17, 1990, Engineering Services Committee Report 13-90, Item 42, for the term of the 1988-1991 term of Regional Council;

b) That this be forwarded to the Engineering Services Committee for their information.

Oct. 12

2.2 Recommendations of the Solid Waste Sub-Committee on The Environmental Monitoring Program at Closed Landfill Sites (Based on the Review of the Terraqua Report)

a) TESTING FREQUENCY

That the frequency of sampling be increased at all sites to monthly for one year. Continue this frequency (once per month) if results indicate a potential problem.

b) SAMPLING SOURCES

i) That samples of leachate, surface water and ground water be taken, where appropriate;

Note: Weather conditions should be noted when sampling.

ii) That when necessary, monitoring wells be installed where they do not already exist;

iii) That sampling locations be chosen carefully to ensure that they are truly upstream and downstream of the site, as non-representative location at some of the sites in the existing program have produced unreliable results;

iv) That a sound quality assurance/quality control (QA/QC) programme be implemented to ensure the quality of lab results should be devised with replicate (split) samples, duplicate (blind) samples, etc.

c) ANALYSIS

i) That the most comprehensive list of conventional parameters be used for all sites for comparability. All metals should be included on this list as well as dissolved oxygen for surface water samples;

ii) That the scope of analysis be increased to include toxic or priority pollutants (U.S. EPA) which include a broad range of industrial pollutants;

Note: Several options are outlined to decide the frequency of priority pollutant analysis.

iii) That at sites where contaminant migration is currently known or even suspected, priority pollutants should be analyzed at least quarterly.

d) **QUANTITY OF LEACHATE**

That the quantity of leachate also be determined or estimated to estimate the amount of contaminants entering the receiving water body.

e) **REMEDIAL ACTION**

That remedial action such as collection and treatment of leachate, capping or excavation should be implemented if found necessary based on results of more comprehensive testing, unless already deemed necessary at some sites;

f) **OTHER CLOSED LANDFILL SITES**

i) That the priority pollutant analysis for the Upper Ottawa Site be included in the list of test parameters and frequency of sampling be increased;

ii) That the Edgewood Site in Flamborough be monitored.

g) **ADDITIONAL STAFF**

That in order to implement a sound and comprehensive monitoring program, additional staff be made available to focus on landfill concerns.

h) **TIME FRAME**

That the Region be expedient in improving the Environmental Monitoring Program, as the increased cost for this is very small compared to the prohibitive cost of dealing with contaminated ground and surface water resources.

2.3 Proposed Composter To Be Built In The Town Of Dundas in Regionally Owned Property Adjacent to the Dundas Transfer Station

Liz Crozier-Organ to speak on this item.

3. FOR THE INFORMATION OF THE COMMITTEE

   a) **Minutes** of the Four R's Joint Staff Committee - September 5, 1990

   b) **Minutes** of the Solid Waste Sub-Committee of the Chairman's Advisory Committee on Environmental Issues

   c) Correspondence from Ted Mealing, Marketing Manager, Amstel Brewery, re: Grizzly Beer Bottle

4. ADJOURNMENT

1(b

MINUTES OF THE CHAIRMAN'S ADVISORY COMMITTEE ON ENVIRONMENTAL ISSUES

The Chairman's Advisory Committee on Environmental Issues met at 8:30 a.m. on Thursday, August 9, 1990 in the Committee Room, 15th Floor, Ellen Fairclough Building, Hamilton.

Present:	Chairman (Councillor) J. Prentice Councillors G. Copps, B. Hinkley Prof. K. Murphy, Wm. Pedder, R. Baetz P. Muldoon, B. McHattie, B. Thompson, R. Steward, C. Katz Regional Chairman R. Whynott
Also Present:	P. Dunn, B. Goodger, D. Edwards, Dr. B. Gibson

1. GENERAL

a) **Declaration of Interest** re: Municipal Conflict of Interest Act: None

b) **Minutes of Chairman's Advisory Committee on Environmental Issues Meeting - July 12, 1990**

(Pedder/Copps)
Be adopted and received as amended.

It was noted that when the Terms of Reference were sent out that an extra page had been included, which referred to the original Terms of Reference.

Mr. McHattie requested that outstanding business from previous meetings be included in the Agenda.

It was indicated that there were three Boards of Education in Hamilton - Wentworth, and that our Terms of Reference required a staff member from the Hamilton Board. It was suggested that the Education Sub-Committee should have representation from the other Boards on its Committee. CARRIED

OTHER BUSINESS

Additional Funding for Windamere Basin Clean-up

Chairman Whynott requested that this Committee support the request of the Hamilton Harbour Commissioners for the additional $106,675.10, for the Region's share in completing the clean-up. It was noted that 95% of the work has been completed, to date.

Chairman Whynott indicated that the Region and City have refused to commit the final share because of land ownership. Chairman Whynott suggested that this is not part of the original agreement and it is a separate issue.

Mr. Muldoon felt that we should support the request, but he is concerned with the fact that contaminates are still flowing into the Basin from upstream and the Sewage Treatment Plant.

Mr. Steward indicated that the S.T.P. had been a problem in the past, but that the effluent from this source meets Ministry of Environment requirements.

Councillor Copps questioned the fact that the dredged material was only removed from the bottom and placed adjacent to the Basin behind dikes.

Councillor Hinkley indicated that the cleanup is the current issue here.

Prof. Murphy indicated that technically, the job should be finished and he also advised that the method being used has an expected lifetime of one hundred years.

(Katz/Pedder)
That the Chairman's Advisory Committee on Environmental Issues support the request of The Hamilton Harbour Commissioner for additional funds in the amount of $106,675.10, for the Region's share in the completion of the clean-up of the Windermere Basin. **CARRIED**

Councillor G. Copps, and Mr. Paul Muldoon OPPOSED.

A second motion was considered, but it was suggested that it be added to the original motion as a note.

NOTE: As a Committee, we strongly suggest that serious efforts be taken to reduce contaminates being discharged into the Windermere Basin.

2. DELEGATION

2.1 Spraying of Pesticides

The delegation was not present at the meeting. They will be asked if they would like to make a presentation at our meeting of September 13, 1990.

Ms. Baetz felt that the city should not be spraying City Parks with pesticides. Mrs. Baetz felt that the use of pesticides should be stopped.

Mr. Pedder advised that wild life is being affected by these sprays.

Mr. Steward advised that the Ministry has cut down on the use of pesticides.

It was suggested that a representative from the Public Works Department be invited to the next meeting to discuss this item.

(McHattie/Muldoon)
That this issue be referred to the Sub-Committee on Natural Areas.

CARRIED

3. NEW BUSINESS

3.1 Joint Staff Committee on Recycling Initiatives

a) That the City and Regional Administrative Committees be requested to strike a joint staff committee composed of employee representatives of the various strata of the organizations, including representation from the Purchasing Department to develop new policies and programs for the expanded use of products and services that contain the maximum level of post-consumer waste and/or recyclable content, without significantly affecting the intended use of the product or service;

b) That the joint staff committee report back to the Finance and Administration Committee with their recommendations.

Councillor Hinkley reported that a) and b), above, are already in place.

Mr. McHattie felt that we should be reducing and revising and not sending a memo to each person. He suggested putting a notice on the bulletin board.

(Baetz/Hinkley)
That a letter from the Secretary be sent to the Purchasing Department expressing this Committee's view on reducing and reusing.

CARRIED

4. FOR THE INFORMATION OF THE COMMITTEE

That the following items be received for information:

a) Correspondence from Rashne Baetz on the Region's need for a bike path connecting Ancaster and Dundas.

The Members were advised that the Conservation Authority has expressed an interest in acquiring portions of the CP Railway Property from Hamilton to Brantford, and Brantford to Simcoe, as a combination Pedestrian Path/Bikeway.

(Baetz/McHattie)
That the secretary send a letter indicating that this Committee supports the interest that the Hamilton Conservation Authority has in developing portions of the abandoned CP Rail line as a combination Pedestrian Path/Bikeway.
CARRIED

(McHattie/Pedder)
That this item be received.

b) Newspaper article appearing in the Calgary Herald, June 21, 1990, "Mountain of compost is rotten to the core", from Councillor Drury.

c) Status of New York State Deposit Legislation.

Prof. Murphy is of the option that a deposit for all cans and bottles, whether refillable or not, is still the best way to eliminate this type of litter.

Councillor Hinkley indicated that the quotas on refillable bottles will be discussed at the AMO meeting.

Mr. Muldoon indicated that Amstel Brewery has changed to disposable stubby beer bottles.

(Hinkley/Muldoon)
That the secretary send a letter to Amstel Brewery on behalf of this Committee expressing our concerns to the stand taken by the company on the use of non-returnable bottles.
CARRIED

d) Correspondence from Councillor Hinkley, Mr. D. Heintz, and Mrs. T. Yull regarding "Litter Containers and Recycling".

Councillor Hinkley advised the members that in California, the recycling of cans, etc., is well received and practised.

The implementation of this type of system always appears difficult to begin.

Ms. Baetz asked Councillor Hinkley if the garbage trucks could not be built to pick up a variety of garbage, to include regulator garbage, recyclables and hazardous waste.

Councillor Hinkley advised that it is possible, but trucks that could pick up all these items would have to be specially designed, which would cause the cost to be very high.

Ms. Goodyer indicated that a Tender call is now out for including Household Hazardous Waste Disposal on a weekly basis.

e) Newspaper article appearing in The Spectator, June 8, 1990, "Environmentalists a motley, combative bunch, Issacs says".

OTHER BUSINESS

Mr. Pedder reported on his effort regarding hospital incinerators. He indicated that certain items are put into coloured bags, depending on their use and then they are disposed of. He advised that he was at the Mount Hamilton Cancer Clinic to see their incinerator, and that the incinerator had produced black smoke for approximately thirty seconds at one stage.

Prof. Murphy stated that Hazardous Waste at McMaster University is strictly controlled.

Mr. McHattie requested someone from the Ministry of Environment to attend one of our meetings to discuss incinerators. Mr. Steward will make arrangements for a staff person to attend a future meeting.

Councillor Copps requested that Mr. Steward provide a report on the Mount Hamilton Hospital Incinerator.

Mr. Muldoon advised that the Terms of Reference for the Sub-Committee on Environmental Goals would be ready for our September meeting.

Mr. McHattie advised that the Terms of Reference for the Sub-Committee on Natural Areas would be ready for our September meeting.

Mr. Katz advised that the Terms of Reference for the Sub-Committee on Air Pollution would be ready for our September meeting.

Mr. Thompson advised that the Terms of Reference for the Sub-Committee on Energy would be ready for our September meeting.

Ms. Baetz has completed the Terms of Reference for her Sub-Committee (copy attached).

Under 3 c) - Former Landfill Sites

NOTE: That Sub-Committee recommendations on former landfill sites will be submitted at the September meeting. It is requested that any recommendations made by the Sub-committee, be taken into consideration before the final revised monitoring program is put into place.

Ms. Baetz asked Ms. Edwards, if Mr. Tapley had been contacted with regard to the CFC's issues.

Ms. Edwards informed the Committee that Mr. Tapley had attended a meeting.

Ms. Edwards indicated that they were reviewing the policy in connection with Regional Facilities.

Dr. Gibson explained what was happening with respect to the By-Law on CFC's.

5. ADJOURNMENT

On Motion (**Murphy/Copps**) the meeting adjourned at 10:45 p.m.

CARRIED

Chairman

Secretary

1c.)

SECRETARY'S REPORT FOR THE CHAIRMAN'S ADVISORY COMMITTEE ON ENVIRONMENTAL ISSUES

The Chairman's Advisory Committee on Environmental Issues met at 8:30 a.m. on Thursday, September 13, 1990 in the Committee Room, 15th Floor, Ellen Fairclough Building, Hamilton.

Present:	Vice Chairman Paul Muldoon Councillors G. Copps, B. Hinkley B. Thompson, R. Baetz, C. Katz
Absent with Regrets:	Councillors J. Prentice, H. Merling Prof. K. Murphy, Wm. Pedder, B. McHattie, R. Steward,
Also Present:	Messrs. R. Zinkewich (Health Dep't.) J. Halliday (Engineering Dep't.) J. Barnett, J. Barr, K. Pidsadny Mmes. B. Goodger, K. Allen

There was no quorum (30) thirty minutes after the time appointed for the 8:30 a.m. meeting. The secretary of the Committee recorded the names of those present and the meeting stood adjourned. Those present, unanimously agreed to discuss the Agenda items.

1. GENERAL

a) **Declaration of Interest** re: Municipal Conflict of Interest Act: None

b) **Minutes of Chairman's Advisory Committee on Environmental Issues Meeting - August 9, 1990** (To be presented at the next scheduled meeting)

2. DELEGATIONS

2.1 Mr. Cal Hubbard of Environmental Products Inc., made a presentation on an Indoor Home Compost Unit that he designed, and related where and how his compost unit could be utilized.

Committee members discussed health concerns, the processing of the material, the construction of the unit and the benefits to the homeowners and businesses.

3. NEW BUSINESS

3.1 Recommendations Resulting From an Independent Review of the Terraqua Report: An Evaluation of the Existing Environmental Monitoring Programs at Eight Closed Landfill Sites in the Region of Hamilton-Wentworth

R. Baetz addressed the Committee on the Terraqua Report.

Committee members were advised of the recommendations contained in the report with respect to testing, frequency, sampling sources, analysis, quantity of leachate, remedial action, closed landfill sites, additional staff, and time frames.

Committee members accepted the recommendations of the Solid Waste Sub-Committee based on their review of the Terraqua Report and that these recommendations be forwarded to the Engineering Services Committee for their consideration.

It was suggested that Rashna Baetz address the Engineering Services Committee on Monday, September 24, 1990, at 2:00 o'clock p.m., with the recommendations contained in the Terraqua report.

Councillors Hinkley and Copps suggested that all closed landfill sites in the Region, as listed in the Ministry of the Environment document, be investigated and tested for of leachate. It was also suggested that staff investigate the findings of the recommendations of the Terraqua Report.

Councillor Hinkley suggested that a letter be sent to the Ministry of the Environment requesting the Ministry's position on former landfill sites in the Region. Staff were also requested to report back to Committee on former waste disposal sites in the Region.

Mr. Katz commended the Solid Waste Sub-Committee members of CACEI on their Report to Committee. Mr. Katz also recommended that the Committee send a letter of appreciation to the former Secretary to Committee, Mr. Jack Ramsay, for his involvement in minute taking.

Mr. Katz distributed correspondence from the Air Pollution Sub-Committee.

3.2 Proposed Composter to be Built in the Town of Dundas on Regionally Owned Property Adjacent to the Dundas Transfer Station

Councillor Copps suggested that Liz Crozier-Organ, Dundas, be invited to the next Committee meeting to further discuss her concerns on the proposed composter to be built in the Town of Dundas

4. FOR THE INFORMATION OF THE COMMITTEE

Correspondence from Ted Mealing of Amstel Brewery, regarding their Recyclable Grizzly Beer Bottle

Paul Muldoon - Acting Chairman, informed Committee members that he would draft correspondence regarding the issue of recyclable beer bottles to Amstel Brewery.

Councillor Copps suggested that Mr. Ted Mealing of Amstel Brewery be invited to the next Chairman's Advisory Committee on Environmental Issues meeting of October 11, 1990.

5. ADJOURNMENT

The meeting adjourned at 10:30 a.m.

2.1

REGION OF HAMILTON-WENTWORTH

- RECOMMENDATION -

DATE: 1990 September 28

REPORT TO: Chairman and Members
Chairman's Advisory Committee on
Environmental Issues

FROM: K. Pidsadny
Legislative Assistant

SUBJECT: Appoint to the Chairman's Advisory Committee
on Environmental Issues

RECOMMENDATION: That Mr. Ben Vandebrug, General Manager, of the Conservation Authority, be appointed the staff representative, to the Chairman's Advisory Committee on Environmental Issues as previously endorsed in principle at the Regional Council Meeting, July 17, 1990, Engineering Services Committee Report 13-90, Item 42, for the term of the 1988-1991 term of Regional Council.

That this be forwarded to the Engineering Services Committee for their information.

Ken Pidsadny
K. Pidsadny

FINANCIAL/STAFFING/LEGAL IMPLICATIONS:

BACKGROUND: The authorization for the Chairman's Advisory Committee on Environmental Issues was endorsed by Regional Council June 6, 1989, Engineering Services Committee Report 10-89, Item #19.

The final composition of 13 Committee members was further endorsed at the July 17, 1990, Regional Council meeting, Engineering Services Committee Report 13-90, Item #42. At that time, eleven Committee members were appointed to the Committee. The vacancy of two positions not yet filled; the Hamilton Region Conservation Authority and the Hamilton Board of Education.

Attached is correspondence received in the Office of the Clerk from M. Alan Stacey, Chairman, Hamilton Region Conservation Authority, advising the appointment of Mr. Ben Vandebrug, General Manager of the Conservation Authority, to sit on the Committee.

Hamilton Region Conservation Authority
Fax # (416) 525-2214

Chairman's Advisory Committee
on Environmental Issues

September 18, 1990

Mr. J. Ramsay,
Legislative Co-ordinator
Chairman's Advisory Committee
on Environmental Issues,
Office of the Clerk,
Regional Municipality of Hamilton-Wentworth,
P.O. Box 910,
Hamilton, Ont.
L8N 3V9

Dear Mr. Ramsay:

Re: Chairman's Committee on Environmental Issues

Further to your letter dated August 2, 1990 re the above, please be advised that the Full Authority at a meeting held on September 6, 1990 appointed Mr. Ben Vandebrug, General Manager of the Conservation Authority, to sit on the committee.

Any communications from your office on this matter should be addressed to Mr. Vanderbrug directly.

Thank you for allowing a senior Authority staff member to be part of this important committee.

Yours truly,

Alan Stacey

Alan Stacey,
Chairman

AS/sg

P.O. Box 7099, 838 Mineral Springs Road, Ancaster, Ontario L9G 3L3 Phone 525-2181 or 648-4427

2.2

RECOMMENDATIONS OF THE SOLID WASTE SUB-COMMITTEE ON THE ENVIRONMENTAL MONITORING PROGRAM AT CLOSED LANDFILL SITES (Based on the Review of the Terraqua Report)

1. TESTING FREQUENCY

That the frequency of sampling be increased at all sites to monthly for one year. Continue this frequency (once per month) if results indicate a potential problem.

2. SAMPLING SOURCES

a) That samples of leachate, surface water and ground water be taken, where appropriate;

Note: Weather conditions should be noted when sampling.

b) That when necessary, monitoring wells be installed where they do not already exist;

c) That sampling locations be chosen carefully to ensure that they are truly upstream and downstream of the site, as non-representative location at some of the sites in the existing program have produced unreliable results;

d) That a sound quality assurance/quality control (QA/QC) programme be implemented to ensure the quality of lab results should be devised with replicate (split) samples, duplicate (blind) samples, etc.

3. ANALYSIS

a) That the most comprehensive list of conventional parameters be used for all sites for comparability. All metals should be included on this list as well as dissolved oxygen for surface water samples;

b) That the scope of analysis be increased to include toxic or priority pollutants (U.S. EPA) which include a broad range of industrial pollutants;

Note: Several options are outlined to decide the frequency of priority pollutant analysis.

c) That at sites where contaminant migration is currently known or even suspected, priority pollutants should be analyzed at least quarterly.

4. QUANTITY OF LEACHATE

That the quantity of leachate also be determined or estimated to estimate the amount of contaminants entering the receiving water body.

5. REMEDIAL ACTION

That remedial action such as collection and treatment of leachate, capping or excavation should be implemented if found necessary based on results of more comprehensive testing, unless already deemed necessary at some sites;

6. OTHER CLOSED LANDFILL SITES

a) That the priority pollutant analysis for the Upper Ottawa Site be included in the list of test parameters and frequency of sampling be increased;

b) That the Edgewood Site in Flamborough be monitored.

7. ADDITIONAL STAFF

That in order to implement a sound and comprehensive monitoring program, additional staff be made available to focus on landfill concerns.

8. TIME FRAME

That the Region be expedient in improving the Environmental Monitoring Program, as the increased cost for this is very small compared to the prohibitive cost of dealing with contaminated ground and surface water resources.

RECOMMENDATIONS RESULTING FROM AN INDEPENDENT REVIEW OF THE TERRAQUA REPORT: An Evaluation of the Existing Environmental Monitoring Programs at Eight Closed Landfill Sites in the Region of Hamilton Wentworth

Prepared for: Chairman's Advisory Committee on Environmental Issues (CACEI)

Prepared by: Solid Waste Subcommittee (SWS) of CACEI:

1. Rashné Baetz, Environmental Engineer, rep. of Conserver Society of Hamilton & District
2. Linda Varangu, Manager, Ontario Waste Exchange & Supervisor, Waste Reduction Centre, ORTECH
3. Craig Wardlaw, Head, Waste Management & Transportation of Dangerous Goods, Environment Canada

Date Submitted: September 13, 1990

BACKGROUND

The Region of Hamilton Wentworth, in 1974, assumed operational responsibility for ten landfill sites throughout the Region which were previously under local government jurisdiction. After the landfills were closed, their ownership was returned to area municipalities. However, the Region had to assume full responsibility for environmental monitoring and any remedial action necessary at the ten closed sites.

The existing environmental monitoring program went into effect in 1981, and was prepared jointly by Regional staff and Ministry of the Environment (MOE) officials. In 1988, MOE asked the Region to review the environmental monitoring program. A consultant, Terraqua Investigations Ltd., was retained by the Region to carry out this review for eight of the sites.

The Terraqua findings and proposed new program were summarized by the Region in Table 1. In April 1990, the Engineering Department was authorized to submit this report to MOE for review.

The eight sites covered in the Terraqua report are:

1. Binbrook (BB)
2. Glanford (GL)
3. Brampton (BR)
4. West Hamilton (WH)
5. Dundas (DU)
6. Stoney Creek (SC)
7. Ancaster (AN)
8. Beverly (BV)

NATURE OF LEACHATE

Refuse in landfills undergoes biological and chemical decomposition, releasing matter that is removed by precipitation percolating through the landfill. The resulting contaminated liquid is called leachate. Typically, in old landfill sites that do not have a liner and leachate collection system, the leachate eventually makes its way to the ground water and/or surface water. How much its strength attenuates by the time it reaches a receiving water body, depends on the hydrogeology of the site.

Leachate is generally of greater concentration than domestic sewage in terms of toxic organics and heavy metals. Leachate is highly variable in quality, varying not only from site to site, but also from time to time at one landfill. Leachate quality varies due to differences in seasonal hydrology and microbiological activity (Steiner, 1980), age of the landfill, and the chemical nature of wastes accepted at the landfill (Keenan et al, 1984). The significant variability of leachate quality, even from month to month, was exemplified in a study on landfill leachate (Sidhwa, 1982). Leachate strength represented by chemical oxygen demand (COD) was measured over a six month period, with 21 sampling days. The COD was 4000 mg/L in the first month, averaged 2000 mg/L during the next four months, and peaked at 9000mg/l in the last month.

SOLID WASTE SUBCOMMITTEE FINDINGS

Taking into consideration that leachate strength is highly variable and that leachate will end up in surface or ground water, it was concluded that the monitoring program proposed in the Terraqua report is not sufficiently comprehensive, and needs to be augmented in order to develop more reliable estimates of the pollution potential of leachate from the Region's closed landfill sites. The proposal to discontinue monitoring at three of the eight sites is premature, as such a decision should be based on conclusions drawn from more comprehensive sampling and analysis.

Undertaking a more comprehensive environmental monitoring program is extremely important for the protection of water quality of creeks, rivers, the lake and drinking water wells that are close to the various sites.

RECOMMENDATIONS OF THE SOLID WASTE SUBCOMMITTEE

The following are recommendations of the SWS on various aspects of the environmental monitoring program. Pertinent information on the sites that was available is summarized in Table 2. Before a revised monitoring program is put in place, it would be advisable to tabulate such information and any additional historic information that is available.

1. TESTING FREQUENCY (refer to Table 1)

Existing Program

4 sites (BB, GL, BR, SC): tested once annually
3 sites (WH, DU, BV) : tested twice annually
1 site (AN) : tested three times annually

Terraqua's Proposed Program

3 sites (BB, GL, SC): discontinue sampling -visual inspection only
3 sites (BR, BV, AN): test once annually
2 sites (DU, WH) : test twice annually

Due to the high degree of variability in leachate quality over time, annual or semi-annual sampling generally will not provide representative data on the actual water quality.

--> Recommendation: Increase the frequency of sampling, at all sites, to monthly for one year. This would give a better profile of seasonal fluctuations of leachate strength and be a more sound basis from which to make decisions about future sampling strategy. Continue this frequency (once per month) if results indicate a potential problem.

2. SAMPLING SOURCES (refer to Table 1)

Existing Program

At six of the eight sites, only surface water samples are taken. The other two sites (AN, BV) have leachate and ground water sampled as well.

Terraqua's Proposed Program

Of the six sites with surface water sampling, the proposed program adds only collection of one leachate sample at one of the six sites (WH).

--> Recommendation: To get a more complete picture of where the leachate is going and what is in it, samples of leachate, surface water, and ground water should be taken where appropriate. (Note: weather conditions should be noted when sampling).

i) Leachate- taking actual leachate samples, where feasible, would allow a better assessment of what parameters to focus on. For example, a site where chromium electroplating waste has been disposed of would most likely produce leachate high in chromium. Therefore, when analyzing surface and ground water samples, it would be essential to analyze for chromium.

ii) Surface Water (upstream and downstream of site)- to obtain a representative sample, it is necessary to obtain several samples at each location (5-6 samples, or the appropriate number dictated by stream sampling protocol), and mix these samples together to get a composite sample which would then be analyzed (However, for volatile organics analysis, individual samples should be tested to prevent volatilization from compositing).

iii) Groundwater- groundwater samples should also be obtained, where appropriate, as all the leachate may not be flowing to the surface water. One sample upgradient and two to three samples downgradient of the site is recommended. Potentially impacted drinking water wells should also be tested where they exist.

- When necessary, monitoring wells should be installed where they do not already exist.

- Sampling locations should be chosen carefully to ensure that they are truly upstream and downstream of the site, as non-representative locations at some of the sites in the existing program have produced unreliable results.

- A sound quality assurance/quality control (QA/QC) program, to ensure the quality of the lab results, should be devised with replicate (split) samples, duplicate (blind) samples, etc.

3. ANALYSIS

The existing analytical program appears somewhat arbitrary. At most sites, the extent of the analysis proposed is to remain the same or testing is to be discontinued altogether. Test parameters in the various MOE groups are listed in Table 3.

Existing Program

3 sites (BB, GL, DU): Group S-B; conventional parameters, no metals
3 sites (BR, WH, BV): Group S-D; conventional parameters, metals
1 site (SC): Group G-D; conventional parameters (no DOC & phenols), metals
1 site (AN): only 4 parameters; conductivity, chloride, hardness, alkalinity

Terraqua's Proposed Program

3 sites (BB, GL, SC): discontinue
1 site (DU) : Group S-B; conventional parameters, no metals (same)
2 sites (BR, WH) : Group S-D; conventional parameters, metals (same)
1 site (AN) : some conventional parameters, no BOD, COD, N-species
1 site (BV) : add priority pollutants

--> Recommendation:

i) Conventional Parameters- the most comprehensive list of conventional parameters appears to be MOE Group S-D which should be used for all sites for comparibility. All metals should be included on this list as a metal scan provides the whole list of metals for the same price as a subset of metals.

ii) Toxic or "Priority" Pollutants (U.S. EPA)- due to the uncertainty regarding the types of wastes disposed of in old landfill sites, it would be advisable to increase the scope of analysis to include priority pollutants. The list of 129 toxic or priority pollutants, which include a broad range of industrial pollutants is shown in Table 4. Several options exist to incorporate priority pollutants analysis:

1. include the priority pollutants in the list of analyses for all samples if the cost differential between that and doing conventional pollutants alone is justifiable.

2. include priority pollutants in the list of analysis two times per year for each site.

3. after two to three months of analyzing for conventional parameters, if significant contaminant migration appears to be taking place, samples should also be analyzed for priority pollutants.

- At sites where contaminant migration is currently known or even suspected, priority pollutants should be analyzed at least quarterly.

4. QUANTITY OF LEACHATE

--> Recommendation: in addition to determining the quality of leachate it is important to estimate the quantity of leachate, and consequently, the amount of contaminants entering the receiving water body. A rough estimate could be done with knowledge of the precipitation rate, the area of the site, and assumptions regarding the percent of infiltration of precipitation into the site (10-40%).

5. REMEDIAL ACTION

--> Recommendation: Remedial action such as collection and treatment of leachate, capping, or excavation should be implemented if found necessary based on results of more comprehensive testing.

6. OTHER CLOSED LANDFILL SITES

The Region inherited ten closed landfill sites. The Terraqua report covers eight of the ten sites. The two sites not covered by the report are the Upper Ottawa site in Hamilton and the Edgewood site in Flamborough.

i) Upper Ottawa site- Regional staff has indicated that due to more concerns about this site in the past, a Health Committee was set up which made specific recommendations on this site. More information is necessary for the solid waste subcommittee to comment on this site. An observation based on monitoring data that was provided for this site was that the analyses did not include priority pollutants.

--> Recommendation: if this observation is correct, and there has been significant concern about this site, priority pollutant analysis should be included in the list of test parameters.

ii) Edgewood Site in Flamborough- Regional staff indicated this site was closed in 1974 and that, besides grading specifications, MOE did not require monitoring by the Region.

--> Recommendation: in addition to the obvious reasons of protecting the environment and human health, the Region should consider the potential liability issue that could result from not performing any monitoring whatsoever at a closed landfill site. It is necessary to reevaluate this decision.

7. ADDITIONAL STAFF

Leachate can contaminate ground water and/or surface water. Methane gas, also produced by landfills, can pose an explosion hazard for nearby buildings. A comprehensive sampling and monitoring program needs to be implemented as soon as possible to protect the environment from potential contamination. The Region has full responsibility for environmental monitoring and remedial action necessary at ten closed landfill sites. However, it is evident that the Region currently lacks the manpower to sufficiently fulfill this very important responsibility.

--> Recommendation: In order to implement a sound and comprehensive monitoring program, including the evaluation of program results and setting up any remedial action required, it is essential to have dedicated staff available to focus on landfill concerns. As is currently being done in other Regions (e.g., Peel, Waterloo, Metro Toronto), it would be very worthwhile for the Region to hire a qualified individual who is familiar with landfills and the necessary suport staff (field technician) to set up and operate a comprehensive monitoring program for closed landfill sites. Such expertise would also benefit the monitoring and evaluation of data from the existing Glanbrook landfill site.

8. TIME FRAME

--> Recommendation: It is very important that the Region be expedient in improving the environmental monitoring program. The longer action on this issue is delayed, the greater the potential for contaminants to migrate to the ground water. The continuing contaminant load to surface waters is also of great concern as it will ultimately impact the Region's drinking water supply. The increased cost, of a more comprehensive program and additional staff dedicated to landfill concerns, is very small compared to the prohibitive cost of dealing with contaminated ground and surface water resources.

REFERENCES

1. Keenan, J. et al, Landfill Leachate Treatment, J.WPCF, v.56:1, Jan. 1984
2. Steiner, R., GROWS Landfill Experiments, Solid Waste Mgmt., Sept. 1980
3. Sidhwa, R., Treatment of Landfill Leachate by the Anaerobic Filter, Master's thesis, Univ. of Toronto, 1982.

APPENDIX A

TABLE 1

1 of 2

ENVIRONMENTAL MONITORING PROGRAM FOR FORMER LANDFILL SITES IN THE REGION

	EXISTING PROGRAM			PROPOSED PROGRAM	
SITE	NO. & TYPE OF SAMPLES	TESTING FREQUENCY	TERRAQUA RECOMMENDATIONS	NO. & TYPE OF SAMPLES	TESTING FREQUENCY
① Binbrook	3 surface water samples	once annually	discontinue	Visual inspection for new seeps and erosion	once annually
② Glanford	3 surface water samples	once annually	discontinue	Visual inspection for new quantity of seepage and erosion	once annually
③ Brampton (Hamilton)	2 surface water samples	once annually	continue & enhance testing	2 surface water samples.	once annually for three years
				Relocate both sampling locations.	increase testing parameters
④ West Hamilton	2 surface water samples	twice annually	continue & enhance testing	Collect sample from the central culvert.	twice annually
				Relocate SW #4 southerly.	
				Collect leachate Sample.	twice annually
⑤ Dundas Site	3 surface water samples	twice annually	continue & enhance testing	3 Surface water samples. Increase to full range of parameters.	For the next two years, twice annually (Spring & Fall). Use same laboratory for the test. Review findings. If no change in trends, discontinue monitoring.

TABLE 1

2 of 2

APPENDIX A

	EXISTING PROGRAM			PROPOSED PROGRAM	
SITE	NO. & TYPE OF SAMPLES	TESTING FREQUENCY	TERRAQUA RECOMMENDATIONS	NO. & TYPE OF SAMPLES	TESTING FREQUENCY
⑥ Stoney Creek	6 surface water samples	once annually	discontinue	Conduct a visual inspection of the site to determine any physical changes and assess need for reimplementation of the testing program.	once annually
⑦ Ancaster	6 surface water samples	three times annually	Continue and enhance testing	6 surface water samples, 1 leachate sample	once annually
	6 piezometer samples		Reduce sampling frequency	BHs 9, 11, 13 & 15	once every two years
	6 standpipe samples		Discontinue sampling	BHs 7, 10, 12	
	1 leachate (M.H.)		install monitoring wells	3 ground water samples	once per year for 2 years, and re-evaluate at that time
⑧ Beverly	5 Monitoring well samples	twice annually	Continue and enhance testing	5 monitoring wells 5 private wells 2 surface water	twice annually
	2 Surface water samples			establish a geophysical plume delineation program	
	5 Private well samples			expand parameters for BH3-II	

TABLE 2 - DESCRIPTION OF CLOSED LANDFILL SITES IN REGION (

SITE	SIZE (hectares)	-YEAR CLOSED -(No. yrs. oper.)	WASTES DISPOSED	COVER	GEOLOGY	PROXIMITY to WATER BODY	LEACHATE	NOTES (S.W.S.)
Binbrook (BB)	0.4 [1acre]	-1980 -(?)	?	? -grassy vegetation present	-15m of silt+clay	-35m to Welland River tributary	-No collection -seeps from toe of landfill	-water quality not noticeably affected. -limited data base (sampled only 5 times)
2. Glanford (GL)	1.2 [3acres]	~1980 -(?)	?	?	-12m of silt+clay -deposits of silt, clay, sand gravel	-close to school well (25m deep) -100m to Welland River	-No collection	-ocassional elevated levels of some parameters -limited data base (sampled only 4 times)
3. Brampton (BR)	5 [12acres]	-1974 -(?)	?	?	-sand	-bordering Redhill Creek -200m to Lake Ontario	-No collection -seeps flow to swamy area & Redhill Crk.	-"upstream" sample not really upstream - but near outflow of LF (will change) -downstream - too far down (will chg.) -∴ can't tell true upstream & downstream water quality -Ammonia, chromium 5x limit @ both locations
1. West Hamilton (WH)	20 [49acres]	·1974 -(23 yrs) [spec. 90/03/15]	55% household 35% commercial 10% industrial (spec. 90/03/15)	-3m foundry sand (3 million)	-gravel, sand, silt & clay	-bordering Chedoke Creek	-No collection	-Downstream sample collected too far down (from canal) subject to much mixing + dilution: Therefore, -not representative of levels in Chedoke creek downgrad. from site; will change -increasing trends - some parameters
5. Dundas (DU)	0.75 [2acres]	-1975 -(?)	?	-cover present but cracked -vegetation non-existent to sparse	gravel	-50m to Borer's Creek	-No collection	-inconsistent sampling frequency, time of year sampled, number of labs used for analysis -some contamin. may seep into gravelly overburden & flow toward public vegetable plots + West Pond
6. Stoney Creek (SC)	2.8 [7acres]	-1979 -(?)	?	-1m foundry sand + ~½m of clay	-3m of siltyclay -fissures noted -sand+gravel lens	-near private wells -(?)m to stream	-No collection -seeps from toe of landfill	-3 well nests on + off-site showed contaminated groundwater in 1982 + 1988 -Phenol: 4280mg/L ?? -Based on 1 sampling day in 1988 of one remaining well nest, Terrani concluded that g.w. quality improved. ??
7 Ancaster (AN)	10 [25acres]	-1982 -(?)	?	?	-silt + fine sand -minor amt. of clay	(?)m to Big Creek	-Yes, collection system	-offsite pond near LF was impacted by leachate despite collection system -limited scope of test parameters. (only 4) - will be increased
8. Beverly (BV)	1.4 [4acres]	-1980 -(10-15yrs)	?	?	-fractured dolostone (was gravel pit) -sandy silt	-near private wells -near pond	-No collection	-1 private well is contaminated -Results indicate contaminant plume from LF is present in the groundwater

Table 3 REGIONAL LANDFILL SITE TEST PARAMETERS

Group S-B	Group S-D	Group G-D
conductivity	conductivity	conductivity
pH		
hardness	hardness	hardness
sulphate	sulphate	sulphate
chloride	chloride	chloride
TKN	TKN	
nitrite	nitrite	nitrite
nitrate	nitrate	nitrate
ammonia	ammonia	ammonia
phosphorus	phosphorus	phosphorus
TDS	TDS	TDS
turbidity		
DO		
COD	COD	COD
BOD	BOD	BOD
	DOC	
phenols	phenols	
		alkalinity
	Ca	Ca
	Mg	Mg
	Na	Na
	K	K
	Cr	Cr
	Cu	Cu
Fe	Fe	Fe
	Ni	Ni
	Zn	Zn
		Pb
		Mn

TABLE 4

Pollutants listed in Part C of Section V of the NPDES permit application (PRIORITY POLLUTANTS)

Metals, cyanide and total phenols
- Antimony
- Arsenic
- Beryllium
- Cadmium
- Chromium
- Copper
- Lead
- Mercury
- Nickel
- Selenium
- Silver
- Thallium
- Zinc
- Cyanide
- Phenols, total

Dioxin
- 2,3,7,8-Tetrachlorodibenzo-*p*-dioxin

GC/MS fraction—volatile compounds
(purgeable)
- Acrolein
- Acrylonitrile
- Benzene
- *bis*(Chloromethyl)ether
- Bromoform
- Carbon tetrachloride
- Chlorobenzene
- Chlorodibromomethane
- Chloroethane
- 2-Chloroethylvinyl ether
- Chloroform
- Dichlorobromomethane
- Dichlorodifluoromethane
- 1,1-Dichloroethane
- 1,2-Dichloroethane
- 1,1-Dichloroethylene
- 1,2-Dichloropropane
- 1,2-Dichloropropylene
- Ethylbenzene
- Methyl bromide
- Methyl chloride
- Methylene chloride
- 1,1,2,2-Tetrachloroethane
- Tetrachloroethylene
- Toluene
- 1,2-*trans*-Dichloroethylene
- 1,1,1-Trichloroethane
- 1,1,2-Trichloroethane
- Trichloroethylene
- Trichlorofluoromethane
- Vinyl chloride

GC/MS fraction—acid compounds
(acid extractable)
- 2-Chlorophenol
- 2,4-Dichlorophenol
- 2,4-Dimethylphenol
- 4,6-Dinitro-*o*-cresol
- 2,4-Dinitrophenol
- 2-Nitrophenol
- 4-Nitrophenol
- *p*-Chloro-*m*-cresol
- Pentachlorophenol
- Phenol
- 2,4,6-Trichlorophenol

GC/MS fraction—base/neutral compounds
(base/neutral extractable)
- Acenaphthene
- Acenaphthylene
- Anthracene
- Benzidine
- Benz[*a*]anthracene
- Benzo[*a*]pyrene
- Benzo[*b*]fluoranthene
- Benzo[*g,h,i*]perylene
- Benzo[*k*]fluoranthene
- *bis*(2-Chloroethoxy)methane
- *bis*(2-Chloroethyl)ether
- *bis*(2-Chloro-*iso*-propyl)ether
- *bis*(2-Ethylhexyl)phthalate
- 4-Bromophenyl phenyl ether
- Butyl benzyl phthalate
- 2-Chloronaphthalene
- 4-Chlorophenyl phenyl ether
- Chrysene
- Dibenz[*a,h*]anthracene
- 1,2-Dichlorobenzene
- 1,3-Dichlorobenzene
- 1,4-Dichlorobenzene
- 3,3′-Dichlorobenzidine
- Diethyl phthalate
- Dimethyl phthalate
- Di-*n*-butyl phthalate
- 2,4-Dinitrotoluene
- 2,6-Dinitrotoluene
- Di-*n*-octyl phthalate
- 1,2-Diphenylhydrazine
- Fluoranthene
- Fluorene
- Hexachlorobenzene
- Hexachlorobutadiene
- Hexachlorocyclopentadiene
- Hexachlorethane
- Indeno[1,2,3-*c,d*]pyrene
- Isophorone
- Naphthalene
- Nitrobenzene
- *n*-Nitrosodimethylamine
- *n*-Nitrosodi-*n*-propylamine
- *n*-Nitrosodiphenylamine
- Phenanthrene
- Pyrene
- 1,2,4-Trichlorobenzene

GC/MS fraction—pesticides and polychlorinated biphenyls (PCBs)
- Aldrin
- α-BHC*
- β-BHC*
- γ-BHC*
- δ-BHC*
- Chlordane
- 4,4′-DDT†
- 4,4′-DDE‡
- 4,4′-DDD§
- Dieldrin
- α-Endosulfan
- β-Endosulfan
- Endosulfan sulfate
- Endrin
- Endrin aldehyde
- Heptachlor
- Heptachlor epoxide
- PCB-1242
- PCB-1254
- PCB-1221
- PCB-1232
- PCB-1248
- PCB-1260
- PCB-1016
- Toxaphene

*BHC = Benzene hexachloride

†DDT = Dichlorodiphenyltrichloroethane

‡DDE = Dichlorodiphenyldichloroethylene

§DDD = Dichlorodiphenyldichloroethane

CHEMICAL ENGINEERING APRIL 30, 1984

23

Liz Crozier-Organ
12B Matilda St. N.
Dundas, Ontario
L9H 2Y8

August 15, 1990

Regional Municipality of Hamilton-Wentworth
Office of the Clerk
P.O. Box 910
119 King Street West
Hamilton, Ontario
L8N 3V9

Attention: Mr. Jack Ramsey, Legislative Co-Ordinator

Dear Mr. Ramsey:

Re: Proposed Composter to Be Built in the Town of Dundas on Regionally-Owned Property Adjacent to the Dundas Transfer Station

I am writing out of concern for a marsh that is located on the same property that the above mentioned composter is to be built; and I am requesting that this matter be put on the agenda for the September meeting of the Regional Chairman's Environmental Advisory Committee.

While the composter is prima facie a good idea insofar that it means a reduction in the amount of garbage going into landfill sites, I am concerned about the possible detrimental effect this operation will have on the delicate ecological balance of the marsh.

Enclosed is a biological survey completed by Christine Bishop of the Hamilton Naturalists Club, which shows that this marsh supports a wide diversity of life. It serves as a quiet corner which provides native species of animals with a secluded nurturing environment. As such, it provides a second sanctuary in conjunction with Cootes Paradise.

Also enclosed is a copy of a letter from Christine Bishop outlining her argument for the preservation and enhancement of this marsh.

Although I understand that the composter is to be built near the Transfer Station, I would appreciate a copy of a map showing its location.

I am concerned as to the impact this composter will have on the marsh as there is a possibility that hazardous materials may result from its operation, especially in view of the fact that sewage sludge will be used in its operation, and commercial and industrial waste may also be accepted. I suggest that further research be done before building this composter near the marsh to ensure that its operation does not have a deleterious effect on this important natural habitat.

I would appreciate a reply from you informing me whether this matter has been placed on the Committee's September agenda and the date and place of the meeting.

Yours truly,

Liz Crozier-Organ

cc: Brian McHattie
Hamilton Naturalist's Club

HAMILTON NATURALIST CLUB

Postal Station E, Box 5182
HAMILTON, ONTARIO L8S 4L3

June 10 1990

Re: Region-owned lands near the Olympic Drive waste transfer site

The following is list of breeding birds, amphibians and reptiles mammals and botanical species found on June 8 1990 in the wetlands located at the above mentioned site:

Breeding Birds

	Number
Sora	1
Willow Flycatcher	3
Swamp Sparrow	1
Common Yellowthroat	1
Yellow Warbler	4
Red-winged Blackbird	6
Black-billed Cuckoo	1
Northern Oriole	1
Warbling Vireo	2
Song Sparrow	3
Eastern Kingbird	3
Indigo Bunting	1
Killdeer	3
Canada Goose	-several families

Reptiles

Painted Turtle	6
Snapping Turtle	1 nesting

Amphibians

Green Frog	2
Leopard Frog	2

HAMILTON NATURALISTS' CLUB

Postal Station E, Box 5182
HAMILTON, ONTARIO L8S 4L3

Mammals

Raccoon	1
Muskrat	1

Aquatic_Plant.

Scirpus sp. (Rush sp.) community
Juncus sp. (Sedge sp.) community
Typha latifolia (Cattail sp.)
Typha angustifolia (Cattail sp.)

HAMILTON NATURALISTS' CLUB

Postal Station E, Box 5182
HAMILTON, ONTARIO L8S 4L3

This wetland site could be a valuable asset to the Dundas community. In its present state, the pond is being impacted by garbage such as tires and concrete blocks which litter its shoreline, and fill from construction activities. Despite these impacts, it remains a very productive wetland as evidenced by the above list of biotic contents noted at the site in just one visit. This does not include any migratory bird actiivty which is likely to occur there in the spring and fall. These types of small wetlands are an island of green and an attractive place for migrant birds among our many urban areas in the Golden Horseshoe. The presence of emergent plants, i.e. sedge and rush communities, cattail sp., is very special because this type of vegetation is lacking in most of the shoreline wetlands of Lake Ontario and Hamilton Harbour due to the destructive activities of carp, and sediment erosion. In fact, these types of plants will be welcome and encouraged in any future wetland rehabilitation efforts in Cootes Paradise.

This wetland must not only be preserved, but has great potential as an educational tool for the public and students in elementary and high school. It is easily accessible, and contains a significant biological community within minutes of Dundas homes. I believe it is an ideal site for the city or region to provide a couple of nature interpretation signs, to enhance the shoreline (!), and perhaps, place a small viewing platform near the baseball field. Our club would be very interested in participating in a co-operative effort with the region or city in this regard. I believe that the site can and will attract people to it but if it is ignored, and eroded inch by inch by fill it will be a sad loss to Dundas. Few towns still possess these types of wetlands so close to their community.

Yours sincerely,

Christine Bishop
Conservation Committee

3a)

Brian Hinkley Alderman Ward Three

71 Main Street West
Hamilton, Ontario
L8N 3T4
Tel: (416) 546-2730
Res: (416) 572-7500

CITY COUNCIL

Finance & Administration Committee -Chairman

Keep Hamilton Clean Committee -Chairman

Seniors Centre Feasibility Study -Chairman

Harbour Task Force -Chairman

Handbill Sub-Committee -Chairman

Hamilton Municipal Retirement Fund -Chairman

Hamilton Seniors Council -Liaison

rks & Recreation Committee -Member

Hamilton Non-Profit Housing -Member

Regional Engineering Committee -Member

Regional Economic & Planning Committee -Member

Chairman's Environmental Advisory Committee -Member

Hamilton-Wentworth Children's Aid Society -Member

September 20, 1990.

FILE NO.
LETTER NO.
SEP 24 1990
COMM.
READ BY
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PLNT. OPER
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INF. MAIN
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ENG SE
ADMIN

Mr. Jack Ramsay,
Secretary,
Chairman's Environmental Advisory Committee,
c/o Department of Engineering.

Dear Mr. Ramsay:

Please find enclosed a copy of the Minutes of the Meeting of the newly-established **Four R's Joint Staff Committee**.

Please place this on the Agenda of the next Meeting of the Chairman's Advisory Committee on Environmental Issues.

Thank you very kindly.

Yours very truly,

Brian Hinkley

Brian Hinkley,
Alderman, Ward 3.

BH:dd

Encl.

Recycled Paper

The "Four R's" Joint Staff Committee

Minutes of Meeting

1990 September 05

9:30 a.m.

Room 219, City Hall

PRESENT:	Alderman B. Hinkley	Acting Chairman
	T. Bradley	Purchasing Department
	D. Elder	Purchasing Department
	P. Jensen	Engineering Department
	K. Christenson	Community Development Department
	J. McNeilly	Community Development Department
	K. Beattie	Treasury Department
	J. Hindson	Treasury Department (Systems)
	D. Farquhar	Public Works Department

1. Alderman Hinkley called the Meeting to order at approximately 9:35 a.m. and welcomed everyone. All those present introduced themselves around the table.

2. Alderman Hinkley suggested that this should not be a political committee and that he will be withdrawing from the Committee after this first meeting. Those people who form this committee should draw on as broad a range of input as possible from all other employees. Recommendations should be forwarded to the politicians if necessary through the Finance and Administration Committee or if the projects are small enough, they can be implemented without political approval. All decisions must keep the "Four R's" in mind: reduce, reuse, recycle and recover. This Committee must develop a philosophy or mission statement, which all other decisions will hinge on. One of the chief mandates should be to work on a new purchasing policy for the City and the Region.

3. With reference to agenda items 3(a), (b) and (c) the Chairman suggested that this scope of work will keep the Committee occupied for a long time. He also suggested that we should work on small ideas first to provide small victories that will lay the ground-work for larger requests in the future.

   J. McNeilly suggested that each meeting should be split into two halfs, with one portion set aside for policy-making and the other set aside for smaller easy to implement environmentally conscious projects. She then asked who the Joint Staff Committee would report to. Alderman Hinkley answered that the Committee could report to both the Finance and Administration Committee and the City/Regional Administrative Committee depending on the nature of the recommendation.

...../2

K. Beattie suggested that inter-departmental competitions could be run to help communicate the needs and desires of the Committee and to initiate change in people's habits.

A discussion continued on different ideas relative to the Committee's work. P. Jensen suggested that a purchasing policy could include a stipulation that information on environmental impacts must be included with each proposal.

After continued discussion T. Bradley suggested that R. Salmon from the Service Department and R. Swan from Property Maintenance should be invited to the meeting because their departments will most greatly be impacted by both the use of recycled materials and recycling in City Hall.

T. Bradley advised that he had recommended a copy of a letter from J. Ramsey advising that the Chairman's Advisory Committee on Environmental Issues had endorsed the establishment of this Joint Staff Committee. Alderman Hinkley advised that it is therefore important to draw more Regional representatives to this group. T. Bradley stated that C. Ward, Ministry of Supplies and Services had offered his staff to assist us in any way possible. There is also an Ontario Buyers Association Conference coming up which can be very useful to gather ideas from other municipalities.

D. Farquhar stated that he had been asked to join the new Administrative Committee and stressed that it is very important that there be a strong connection between this Environmental Committee and the Joint Administrative Committees for the Region and City. Alderman Hinkley stated that the Terms of Reference for the Committee should be worked on and that it is important that we do not get too broad with our scope and membership. This Terms of Reference should be approved by the Finance and Administration Committee and City and Regional Councils.

4. Alderman Hinkley suggested that more Regional representatives will be required on the Committee. It was also suggested by other members that HECFI and the Library Board should also be involved. K. Christenson suggested that communication with the general City and Regional staff population can be undertaken through some of the existing newsletters such as the APAE newsletter, Regional newsletter and Outlook. T. Bradley also suggested that Regional Social Services must have a representative since they are so large. J. Hindson stated that all of these groups previously mentioned are represented on the two administrative committees.

Regarding the need for a committee chairperson and secretary, J. McNeilly offered to perform the functions of secretary for the time being and suggested that J. Hindson act as the Chairman. J. Hindson accepted until the Committee is on its feet. Alderman Hinkley suggested that the Committee should start working on the purchasing policy as a major item to deal with. T. Bradley advised that paper and envelopes must be purchased this Fall and, therefore, this could be used as a pilot project for the use of recycled paper.

...../3

Regarding the Terms of Reference for the Committee, P. Jensen offered to draft this for the Committee's review. The Purchasing Department will draft a purchasing policy as well for the Committee's review. After continued discussion about information that is available, J. Hindson suggested that all of this material should be accumulated in an organized fashion. The Secretary can organize and create a list with a synopsis of each item.

J. Hindson also stated that he is concerned about the organizational structure of the Committee and who the group will be reporting to. The Environmental Committee should be utilizing the administrative teams and management teams to help drive our recommendations forward.

5. It was proposed that the Committee be called the "Four R's" Joint Staff Team. This name will be used in the interim until a more appropriate name has been found.

6. The next meeting was scheduled for 1990 September 26 at 1:30 p.m. in Room 264. The proposed agenda will be as follows:

    1. Organizational Structure
    2. Committee Membership
    3. Paper Recycling
    4. Catalog of Available Material

D. Elder suggested that the Regional Chairman's Advisory Committee on Environmental Issues be informed about what this Committee has and will be doing.

The Meeting adjourned at 10:50 a.m.

3b)

SOLID WASTE SUBCOMMITTEE OF CACEI

TERMS OF REFERENCE (AUG/`90)

TITLE: AIR POLLUTION SUBCOMMITTEE

REPORTS TO: CHAIRMAN'S ADVISORY COMMITTEE ON ENVIRONMENTAL ISSUES.

OBJECTIVES: TO ENQUIRE INTO AND MAKE RECOMMENDATIONS ON AIR POLLUTION ISSUES REFERRED TO IT BY CACEI.

COMPOSITION:

1. CUPPY KATZ, BUSINESS REPRESENTATIVE,
   CUPPY KATZ ENTERPRISES.

2. JIM BARNETT, PRESIDENT,
   CANADIAN DRAWN STEEL CO., INC.

3. TO BE ANNOUNCED.

3 c)

AMSTEL BREWERY
CANADA LIMITED

August 24, 1990

Mr. J. Ramsay
Legislative Co-ordinator
Committee on Environmental Issues
The Regional Municipality of Hamilton-Wentworth
119 King Street West
15th Floor
Hamilton, Ontario
L8N 3V9

Dear Mr. Ramsay,

In your letter to me it seems you are using different terms interchangeably leading me to believe you do not understand how the new Grizzly bottle is actually handled!

First of all, the bottles are 100% returnable to the BRI for refund (just like every other 12 pack of beer sold in the (province).

Given industry standards we expect a 97-98% return rate.

These bottles are recycled in Milton by Consumers Glass, "in this time of recycling." For full background information, I have attached a fact sheet outlining several environmental issues we took into account.

Please read this fact sheet and make your Committee aware of our responsible activity.

If you have any questions, please contact me to discuss.

Sincerely,

AMSTEL BREWERY CANADA LIMITED

Ted Mealing

TED MEALING
Marketing Manager

P.S. I am curious why we were not called or consulted for verification or input on the issue!

RECEIVED
AUG 28 1990
REGIONAL CLERK'S OFFIC

/lr

AMSTEL BREWERY
CANADA · LIMITED

August 8, 1990

The Editor
Hamilton Spectator
44 Frid Street
Hamilton, Ontario
L8N 3G3

Dear Sir,

RE "UPROAR OF STUBBIE"

I would like to take the opportunity to present the complete facts regarding the new Grizzly 300 ml stay cool bottle and package.

Mr. E. McGuinness used many of my quotes out of context creating misleading comparisons and he made several factual errors in his article.

I respect the motives of both Messrs. McGuinness and McRobert (of Pollution Probe), however, I would like equal opportunity to present our reasoning and correct the errors.

The environment is a primary issue in all of our activities. To imply otherwise is misleading.

The new Grizzly actually results in a lower, not higher, environmental cost than existing 12 pack bottle cartons.

The reasons are as follows:

* All components of the new package are recycleable.

* The volume of material is reduced to 20% of standard Ontario 12 packs.

* Plastic reinforcing straps are not used and there is not any use of hot glue in the new carton.

* The glass bottle is returned to Brewers Retail for refund and then sent to Amstel. From Amstel it goes to Consumers Glass in Milton to be recycled. (a Canadian made bottle not American as stated by McGuinness.)

The plastishield is recycled separately from the bottle (and does not contain CFC's). It is vacuum collected at point of crushing for recycling.

The cardboard case is recycled along with the other brewery beer cartons.

The new Grizzly 12 pack is very much in support of and a part of the closed deposit-refund system as opposed to "meddling" with this successful system. The consumer pays a .10¢/bottle deposit on the 12 pack and receives their refund when the empties are returned! Just like all other 12 packs!

The smaller lighter 300 ml bottle actually results in reduced fuel usage in shipping (vs the larger, heavier "long neck" bottles).

The recycling of the Grizzly bottle uses only 10% of the water used to wash existing 341 ml bottles.

There is no need to use bottle cleaning chemicals.

There is no usage of heat energy for the cleaning and rinsing of bottles.

These energy savings are the relevant comparisons to the energy expended in resmelting the bottle each time, and likely result in net lower energy usage.

Finally, Mr. McGuinness quoted prices that were incorrect. The new Grizzly 12 pack is $10.60 including deposit, (not $10.30) and existing 12 packs of 341 ml bottles are $12.90 (not $12.60). This is a lower cost per ml. The reduced price is not just a result of the smaller bottle.

Mr. McGuinness, yes .. "there is a business to run and marketing is an issue," BUT NOT at a cost to the environment!

As evidenced by the above mentioned facts, the new Grizzly is not "a disastrous precedent nor is it "absurd and totally illogical." Quite the contrary, wouldn't you say.

Yours truly,

AMSTEL BREWERY CANADA LIMITED

TED MEALING
Marketing Manager

/lr

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URBAN/MUNICIPAL
C51C3
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URBAN MUNIC
[illegible]
GOVERNMENT DOCUMENTS

CHAIRMAN'S ADVISORY COMMITTEE ON ENVIRONMENTAL ISSUES

AGENDA

DATE: Thursday, November 8, 1990

TIME: 8:30 o'clock a.m.

PLACE: Committee Room, 15th Floor
Regional Offices

---

1. GENERAL

a) **Declaration of Interest** re: Municipal Conflict of Interest Act
b) **Minutes of Chairman's Advisory Committee on Environmental Issues Committee Meeting - October 12, 1990**

2. BUSINESS ITEMS

2.1 1988 Hamilton-Wentworth Air Quality Report (Prepared by Environment Ontario)

For the consideration of the committee.

2.2 Chlorofluorocarbons

Roy Duncan, Transportation Dep't., H.S.R., to discuss chlorofluorocarbons with the committee.

3. FOR THE INFORMATION OF THE COMMITTEE

a) Zebra Mussels - Mitigation Options for Industries, Conference in Toronto - Royal York Hotel, Feb. 11 & 12/91

b) Potential for the Use of Regional Laboratory GC/MS for analysis of trace organics in the potable water supply

NOV 8 1990

c) Newspaper article - October 13, 1990, "Man from Glad has yet to recycle his 'recyclable' bag: spokesman

d) Newspaper articles - October 19, 1990, "Environment - A Special Report"

4. OUTSTANDING BUSINESS

Date	**Subject**	**Referred to:**
June 14, 1990	Energy Conservation Lights - Office Tower **Item 2.3 i)**	Sub-Committee on Energy
June 14, 1990	Steetley Landfill Site **Item 2.3 ii)**	Sub-Committee on Water Quality
June 14, 1990	Resolution - County of Wellington, re: Use of Tire Derived Fuel **Item 2.6**	Sub-Committee on Air Pollution
August 9, 1990	Spraying of Pesticides **Item 2.1**	Sub-Committee on Natural Areas
August 9, 1990	Joint Staff Committee on Initiatives **Item 3.1**	Committee to compose letter Secretary to Administrate
August 9, 1990	Bike Paths CP Railway Property	Committee to compose letter Secretary to Administrate
August 9, 1990	Hospital Incinerators MOE Staff to be invited to discuss	Committee to compose letter

Date	Subject	Referred to:
September 13, 1990	Correspondence - Amstel Brewery - Recyclable Beer Bottles	Paul Muldoon
October 12, 1990	Proposed Composter To Be Built In The Town Of Dundas	Tabled
October 12, 1990	Correspondence from Dr. Gibson re: Legislation to Control or Reduce Chlorofluorocarbons	Tabled

5. ADJOURNMENT

1b)

MINUTES OF THE CHAIRMAN'S ADVISORY COMMITTEE ON ENVIRONMENTAL ISSUES

The Chairman's Advisory Committee on Environmental Issues met at 1:00 p.m. on Friday, October 12, 1990 in the Committee Room, 15th Floor, Ellen Fairclough Building, Hamilton.

Present:	Chairman (Councillor) J. Prentice Councillors G. Copps, B. Hinkley Wm. Pedder, R. Baetz, B. McHattie, B. Thompson, B. Vanderbrug,, G. Birchall
Absent with Regrets:	Councillor H. Merling P. Muldoon, K. Murphy, C. Katz
Also Present:	V. Terluk (Engineering Dep't.), P. Powell (Health), D. Edwards (Solicitors), R. Stewart (M.O.E.), K. Pidsadny

1. GENERAL

a) **Declaration of Interest** re: Municipal Conflict of Interest Act (None)

b) **Minutes of Chairman's Advisory Committee on Environmental Issues Committee Meeting - August 9, 1990**
(Copps/Pedder) be received and adopted as presented.

c) **Secretary's Report of the Chairman's Advisory Committee on Environmental Issues Committee Meeting - September 13, 1990**
(Hinkley/Baetz) be received and adopted as presented.

CARRIED

2. BUSINESS ITEMS

2.1 Appoint to the Chairman's Advisory Committee on Environmental Issues

(Hinkley/Copps)

a) That Mr. Ben Vandebrug, General Manager, of the Conservation Authority, be appointed the staff representative, to the Chairman's Advisory Committee on Environmental Issues as previously endorsed in principle at the Regional Council Meeting, July 17, 1990, Engineering Services Committee Report 13-90, Item 42, for the term of the 1988-1991 term of Regional Council;

b) That Mr. Gary Birchall, Board of Education, be appointed the staff representative, to the Chairman's Advisory Committee on Environmental Issues as previously endorsed in principle at the Regional Council Meeting, July 17, 1990, Engineering Services Committee Report 13-90, Item 42, for the term of the 1988-1991 term of Regional Council;

c) That this be forwarded to the Engineering Services Committee for their information.

CARRIED

2.2 Recommendations of the Solid Waste Sub-Committee on The Environmental Monitoring Program at Closed Landfill Sites (Based on the Review of the Terraqua Report)

(Copps/Thompson)
It was agreed that Rashna Baetz would address the Engineering Services Committee to present the following recommendations:

a) **TESTING FREQUENCY**

That the frequency of sampling be increased at all sites to monthly for one year. Continue this frequency (once per month) if results indicate a potential problem.

b) **SAMPLING SOURCES**

i) That samples of leachate, surface water and ground water be taken, where appropriate;

Note: Weather conditions should be noted when sampling.

ii) That when necessary, monitoring wells be installed where they do not already exist;

iii) That sampling locations be chosen carefully to ensure that they are truly upstream and downstream of the site, as non-representative location at some of the sites in the existing program have produced unreliable results;

iv) That a sound quality assurance/quality control (QA/QC) programme be implemented to ensure the quality of lab results should be devised with replicate (split) samples, duplicate (blind) samples, etc.

c) **ANALYSIS**

i) That the most comprehensive list of conventional parameters be used for all sites for comparability. All metals should be included on this list as well as dissolved oxygen for surface water samples;

ii) That the scope of analysis be increased to include toxic or priority pollutants (U.S. EPA) which include a broad range of industrial pollutants;

Note: Several options are outlined to decide the frequency of priority pollutant analysis.

iii) That at sites where contaminant migration is currently known or even suspected, priority pollutants should be analyzed at least quarterly.

d) **QUANTITY OF LEACHATE**

That the quantity of leachate also be determined or estimated to estimate the amount of contaminants entering the receiving water body.

e) **REMEDIAL ACTION**

That remedial action such as collection and treatment of leachate, capping or excavation should be implemented if found necessary based on results of more comprehensive testing, unless already deemed necessary at some sites;

f) **OTHER CLOSED LANDFILL SITES**

i) That the priority pollutant analysis for the Upper Ottawa Site be included in the list of test parameters and frequency of sampling be increased;

ii) That the Edgewood Site in Flamborough be monitored.

g) **ADDITIONAL STAFF**

That in order to implement a sound and comprehensive monitoring program, additional staff be made available to focus on landfill concerns.

h) **TIME FRAME**

That the Region be expedient in improving the Environmental Monitoring Program, as the increased cost for this is very small compared to the prohibitive cost of dealing with contaminated ground and surface water resources.

CARRIED

2.3 Proposed Composter To Be Built In The Town Of Dundas in Regionally Owned Property Adjacent to the Dundas Transfer Station

This item will remain tabled until the delegation wishes to address the committee.

NEW BUSINESS #1

Terms of Reference for the Energy SubCommittee

(Copps/McHattie)
That the Terms Of Reference be received and adopted.

CARRIED

NEW BUSINESS #2

Terms of Reference for Natural Areas Subcommittee

(Copps/Vanderbrug)
That the Terms of Reference be received and adopted.

CARRIED

Councillor Hinkley suggested that the subcommittee for a point of interest, try and relate information concerning natural areas from 20 years previous to the current time to point out the loss of natural areas on one map.

Brian McHattie pointed out that there are 37 environmentally sensitive areas in the Official Plan of Hamilton-Wentworth.

R. Stewart highlighted the fact that not only should there be concern of the existing environmentally sensitive areas, but stressed the importance of changing society's attitude towards the preservation of these areas.

NEW BUSINESS #3

Correspondence from Councillor Hinkley re: 1988 Hamilton Air Quality Report

(Hinkley/Baetz)

a) That this correspondence be received;

b) That this be referred to the Committee on Air Quality SubCommittee and to the City of Hamilton Transportation and Environmental Committee;

c) That the 1988 Hamilton Air Quality report prepared by the Ministry of the Environment be on the next Chairman's Advisory Committee on Environmental Issues.

NEW BUSINESS #4

Legislation to Control or Reduce Chlorofluorocarbons

Correspondence from Dr. B. Gibson, Associate Medical Officer of Health for Hamilton-Wentworth, dated October 12, 1990.

Debbie Edwards, Solicitors' Office, Patrice Powell, Health Department and Mr. Tapley, citizen, addressed committee members.

Ms. Edwards express the Region's jurisdiction and legality of any type of legislation or municipal monitoring of CFC's.

Mr. Tapley explained that CFC's should be treated the same as PCB's.

It was suggested that staff take a look at implementing an in-house policy statement on reviewing ways in which City and Regional departments can be more environmentally responsible.

(Thompson/Copps)
That this item be **tabled** for further information.

CARRIED

3. **FOR THE INFORMATION OF THE COMMITTEE**

(McHattie/Baetz)
That the following items be received:

a) **Minutes** of the Four R's Joint Staff Committee - September 5, 1990

b) Terms of Reference of the Solid Waste Sub-Committee of the Chairman's Advisory Committee on Environmental Issues

c) Correspondence from the Ministry of the Environment, re: 1988 Hamilton Air Quality Report;

d) Correspondence from Ted Mealing, Marketing Manager, Amstel Brewery, re: Grizzly Beer Bottle

CARRIED

4. **ADJOURNMENT**
On motion (**Copps/Thompson**) the meeting adjourned at 3:05 p.m.

CARRIED

Chairman

Secretary

2.1

ISSN

1988 HAMILTON - WENTWORTH
AIR QUALITY

Report prepared by:
F. Dobroff
West Central Region

SEPTEMBER 1990

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1. SUMMARY

Airborne particulates (dust) and odours have been Hamilton's main air pollution problems over recent years. In 1988, particulate levels, namely dustfall, reduced significantly across the City. Odours due to reduced sulphur compounds were also reduced dramatically in 1987. Further improvements are still necessary as dustfall still remained well above objectives in the industrial zone, and odours continued to occur, especially at the Beach Blvd. area.

The Air Pollution Index reached the advisory level of 32 once in 1988 compared to 2 occasions in 1987. The new Air Quality Index implemented in June, 1988 showed that ozone and suspended particles were the pollutants of greatest concern, reaching the moderate and poor ranges of the new index most frequently of six measured pollutants.

The network of fluoride monitors indicated lower concentrations than 1987, but levels near Hamilton Brick were well above objectives, sufficient to cause vegetation damage near the plant. The company has undertaken an abatement program to reduce their fluoride emissions.

Gaseous pollutants showed little change in 1988 except for ozone. Ozone is one of two gases which continued to exceed criteria. It is a product of long range transport and is produced photochemically to excess during the summer. Due to an extremely hot summer, ozone reached the moderate and poor ranges of the AQI from 108 to 196 hours at four Hamilton stations. In past years only 20 to 30 such hours were measured.

Total reduced sulphur concentrations reduced dramatically in the city during 1987. The improvement appears directly related to Stelco Inc. replacing direct contact coolers in the coke oven by-products area with indirect coolers in April

1987, and changes in slag quenching practices. The only place where improvement did not occur was the Beach Blvd. area. Stelco's effect there was limited by distance. Hamilton's other steel company - Dofasco Ltd., and to a lesser extent the Carbochem tar plant, continued to impinge on the Beach. In 1988, levels actually increased at the Beach for reasons unknown.

Total reduced sulphur compounds are a major cause of odours. Negotiations with industry for reductions of these emissions are ongoing. Control programs or studies are underway at Stelco, Carbochem and Dofasco. Naphthalene is also an odourous compound and Carbochem's control programs will eliminate these odours.

Airborne dust measurements near Steetley Industries, a limestone quarry in Flamborough, showed that further improvement in dustfall levels occurred in 1988 following the installation of a new electrostatic precipitator at the company's processing plant. However, suspended particulate measurements continued to show a localized problem, and some dustfall levels were still above objectives. Further measures are being taken by the company to improve air quality.

2. INTRODUCTION

The Air Management Program in Ontario is based on controlling man- made emissions to meet ambient air quality objectives, which in turn are based on known effects on health, quality of life, sensitive vegetation or materials, whichever is most stringent. To achieve these objectives, sources of pollution are identified, their emissions evaluated and appropriate control measures are instituted. Ambient air monitoring is used to identify pollution sources and to verify that controls have been successful. Monitors are usually sited in areas suspected of experiencing higher levels of air pollution. When these areas achieve acceptable air quality, then it is assumed that other areas should also be acceptable.

3. MONITORING NETWORK

The Ministry of the Environment operates a network of ambient air monitors throughout Hamilton as shown in Figure 1 and Table 1. The network centres on six automated stations which continuously monitor a variety of pollutants and telemeter hourly averaged data to a central computer facility in Toronto. These stations are:

29000 - Elgin/Kelly, downtown
29025 - Barton/Sanford, between downtown & the industrial zone
29102 - Beach Blvd
29105 - Nash/Kentley, in the east end
29114 - Vickers/East 18th, on the mountain
29118 - Main West/Highway 403, in the west end

As a new feature to this report, data from a station at the Joseph Brant Hospital in Burlington operated by the Ministry's Central Region will be presented in this report. This station is known as 44008 - Highway 2/North Shore Blvd.

The remainder of the network consists of numerous but less sophisticated monitors, many of which have been in existence since 1970. In addition to this regular network, special surveys are sometimes carried out to evaluate specific problems.

In June, 1988, the Ministry commenced broadcasting the new Air Quality Index across the Province. It is measured at over 30 locations, including the downtown, east, west and mountain stations in Hamilton and the Burlington station. A description of the AQI and the 1988 results will appear later in this report.

Meteorological data (wind speed, wind direction and air temperature) are observed at station 29026, (Woodward Avenue) located on the sewage treatment plant grounds. Figure 2 presents the wind frequency distribution measured and clearly indicates that winds from the southwest predominate.

The results of a computer program known as a "pollution rose" are included in this report. The program is essentially a cross-tabulation of hourly pollutant concentrations with wind direction. The data from this program are illustrated on various diagrams. On each "rose", the length of each line drawn is proportional to the average concentration of a pollutant when the wind was blowing from that direction. The longest lines in the diagram usually point to a source or sources of the pollutant in question. The concentrations will be influenced both by the quantity of emissions and by meteorological conditions such as wind speed, etc. As a result, the program is a useful tool in identifying sources of pollutants.

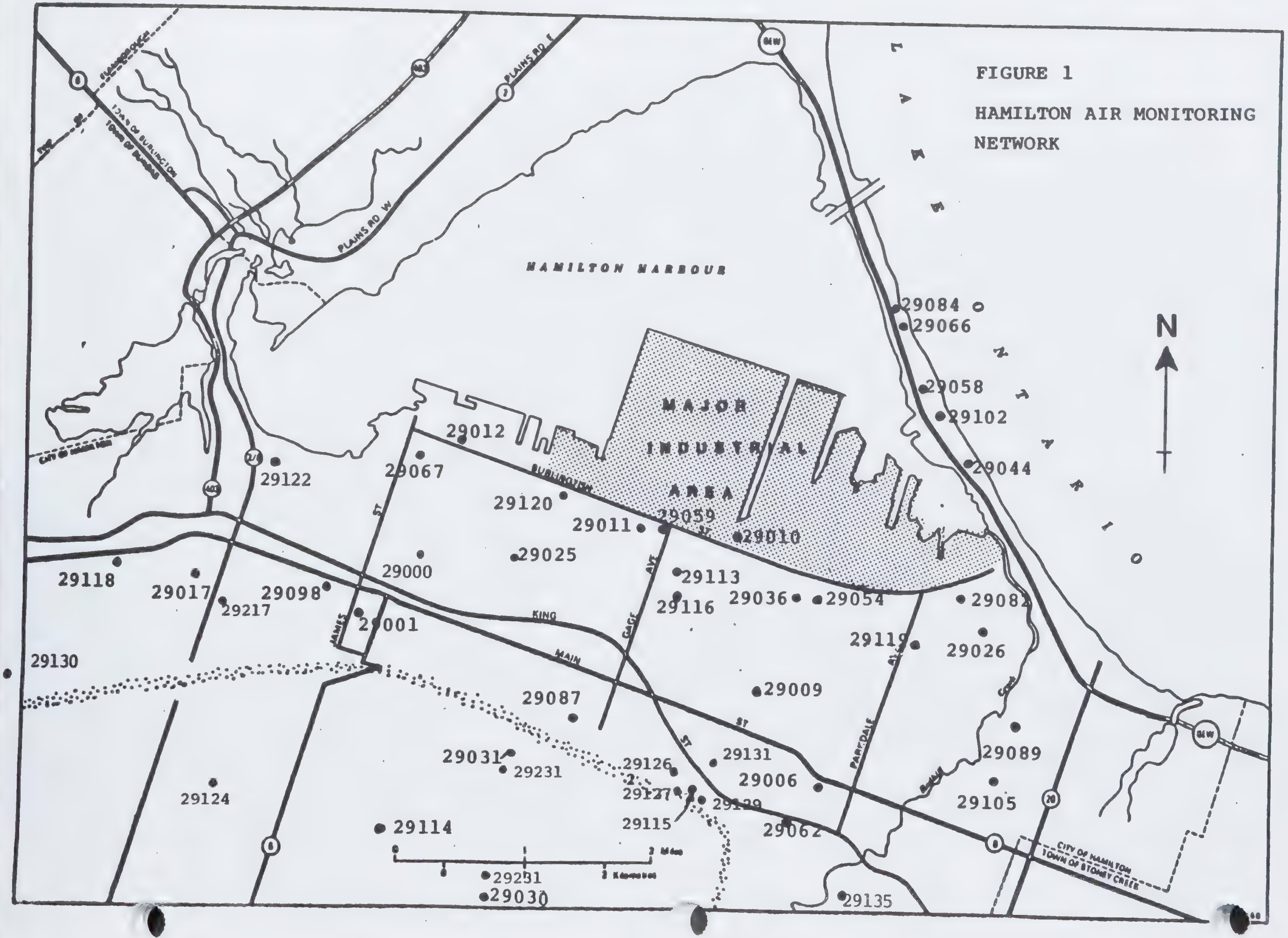


FIGURE 1

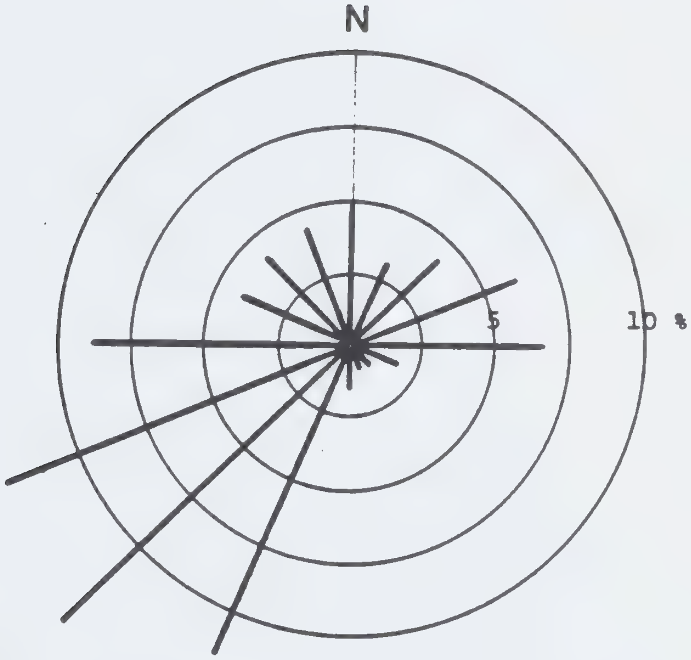
HAMILTON AIR MONITORING NETWORK

FIGURE 2

WIND FREQUENCY DISTRIBUTION

HAMILTON - 1988

29026- Woodward Ave. Sewage Treatment Plant



Lines indicate direction from which wind blew

TABLE 1

HAMILTON AIR MONITORING STATION LOCATIONS

NUMBER	LOCATION	Air Quality Index	Sulphur Dioxide	Ozone	Carbon Monoxide	Oxides of Nitrogen	Total Reduced Sulphur	Soiling Index	Suspended Particulate	Fluoride	Dustfall	Wind/Temp.
29000	Elgin/Kelly	X	X	X	X	X	X	X	X			
29001	Hughson/Hunter							X		X	X	
29006	Queenston/Craigroyston										X	
29009	Kenilworth/Roxborough								X		X	
29010	Burlington/Ottawa										X	
29011	Burlington/Leeds								X		X	
29012	Burlington/Wellington								X	X	X	
29017	Chatham/Frid								X		X	
29025	Barton/Sanford		X				X	X	X	X	X	
29026	Woodward/Brampton											X
29030	Camden/Mohawk										X	
29031	Concession/Upper Sherman										X	
29036	Roosevelt/Beach Boulevard										X	
29044	Wark/Beach Boulevard										X	

TABLE 1 (cont.)

HAMILTON AIR MONITORING STATION LOCATIONS

NUMBER	LOCATION	Air Quality Index	Sulphur Dioxide	Ozone	Carbon Monoxide	Oxides of Nitrogen	Total Reduced Sulphur	Soiling Index	Suspended Particulate	Fluoride	Dustfall	Wind/Temp.
29054	Beach Road/Conrad									X		
29059	Burlington/Gage									X		
29062	King E./Barons									X		
29066	Killarney/Beach Blvd.									X		
29067	Hughson N./Macaulay								X			
29082	Leaside/Knox										X	
29084	Rembe/Beach Blvd.										X	
29087	Cumberland/Prospect								X			
29089	Barton/Nash								X			
29098	Bay/Main West								X			
29102	Beach Blvd./Towers		X		X	X	X	X	X		X	
29105	Nash/Kentley	X	X	X				X				

TABLE 1 (cont.)

HAMILTON AIR MONITORING STATION LOCATIONS

NUMBER	LOCATION	Air Quality Index	Sulphur Dioxide	Ozone	Carbon Monoxide	Oxides of Nitrogen	Total Reduced Sulphur	Soiling Index	Suspended Particulate	Fluoride	Dustfall	Wind/Temp
29113	Gertrude/Depew								X			
29114	Vickers/East 18th	X	X	X			X	X	X			
29115	London/Justine									X		
29116	Dalkeith/Ottawa									X		
29118	Main W./Highway 403	X	X	X		X		X	X			
29119	Morley/Parkdale								X	X		
29120	Dickson/Burlington									X		
29122	Dundurn/York								X			
29124	Laurier/Columbia								X			
29126	Rosslyn/Montclair									X		
29127	Lawrence/Balmoral									X		
29129	Province/Justine									X		
29130	Ewen/Whitney								X			
29131	Central/Graham									X		
29135	Mt. Albion/Albright								X			
44008	Hwy 2/N.Shore Blvd. Burlington	X	X	X	X	X		X	X			

4. ANALYSIS OF DATA

4.1 Air Quality Index

The AQI is a system by which the public can be informed about air quality on a daily and even hourly basis. The index supplemented the old Air Pollution Index which has been in place since 1970, and still exists as a subindex of the AQI.

In the AQI, hourly concentrations of sulphur dioxide, soiling index (particles), nitrogen dioxide, carbon monoxide, ozone and reduced sulphur compounds are all converted to a common scale of numbers. In addition to these hourly measurements, 8-hour average levels of carbon monoxide and the API, a 24-hour function of sulphur dioxide and particles are also included as subindices making a total of 8 potential subindices measured every hour. The official AQI broadcast is the highest subindex at that time.

The common scale of numbers are classified as follows:

0-15	Very Good
16-31	Good
32-49	Moderate
50-99	Poor
100+	Very Poor

Index levels up to 31 should have little or no effect on people and the environment. Beginning at the moderate level, effects such as odour, vegetation damage and some health effects to sensitive individuals start to occur.

In the poor and very poor categories, these symptoms become more and more acute such that virtually all people would be hampered in the very poor range.

When moderate levels or higher are measured, public health advisories can be issued to the public along with the actual index number.

The AQI started in June 1988, and statistics on hourly frequencies in the five concentration categories for the four Hamilton stations and the Burlington station are presented in Table 2.

Although the index only began in June, the AQI results are presented as if the index had been in actual operation for the entire year. As can be seen, ozone (O_3) was the most problematic pollutant followed by suspended particles (COH). More details on these pollutants and the others in the AQI will be discussed in the following sections of this report.

TABLE 2

AIR QUALITY INDEX - 1988

HOURLY FREQUENCY DISTRIBUTION

Station	Pollutant	0-15 Very Good	16-31 Good	32-49 Moderate	50-99 Poor	100 - Very Poor
29000	SO_2	8539	1	0	0	0
Elgin/Kelly	COH	7900	583	82	2	0
Downtown	O_3	8222	402	136	8	0
	NO_2	8566	4	0	0	0
	CO 1 hr	8564	0	0	0	0
	CO 8 hr	8583	0	0	0	0
	TRS	8396	133	18	0	0
	API	6990	1520	40	0	0
29105	SO_2	8479	0	0	0	0
Nash/	COH	8025	153	18	0	0
Kentley	O_3	7767	479	103	5	0
East	API[7]	4932	53	0	0	0
29114	SO_2	8465	0	0	0	0
Vickers/	COH	8156	195	9	0	0
E18th	O_3	7854	443	151	5	0
Mountain	TRS	7721	160	26	0	0
	API[7]	4931	122	0	0	0
29118	SO_2	6647	0	0	0	0
Main W.	COH	7231	460	36	0	0
West	O_3	7900	428	186	10	0
	NO_2	8266	2	0	0	0
	API[7]	4515	449	0	0	0
44008	SO_2	8671	1	0	0	0
Hwy2/N.Sh.	COH[7]	4612	356	33	0	0
	O_3	7885	279	34	3	0
Burlington	NO_2	8496	1	0	0	0
	CO 1 hr	8403	0	0	0	0
	CO 8 hr	8403	0	0	0	0
	API[7]	4171	848	0	0	0

[7] - 7 months of data

4.2 Air Pollution Index

The Hamilton air pollution index (API) continued to be used as a warning system to alert the public to elevated air pollution levels and as a trigger for cutbacks in industrial emissions. It is derived from 24 hour average concentrations of sulphur dioxide and particulate matter. The combination of these two pollutants at elevated levels is indicative of detrimental human health effects. Hourly concentrations of both pollutants are telemetered to a central computer facility in Toronto which then calculates the index hourly, based on the following equations:

Downtown $API = 1.47(16.4\ COH + 122.9\ SO_2)^{.92}$
East $API = 5.18(4.7\ COH + 124.4\ SO_2)^{.64}$
West $API = 2.84(10.8\ COH + 120.9\ SO_2)^{.77}$
Mountain $API = 2.68(11.0\ COH + 122.2\ SO_2)^{.79}$
Burlington $API = 2.24(1.30\ COH + 123.6\ SO_2)^{.83}$

Where: COH is the 24-hour average soiling index concentration expressed in coefficient of haze units.

SO_2 is the 24-hour average sulphur dioxide concentration expressed in parts per million.

No action is taken for readings up to 31. At 32 (Hamilton stations only), known as the advisory level, and with a forecast of unfavorable dispersion conditions, major industries in Hamilton are notified and asked to voluntarily curtail certain operations. At an API of 50, cutbacks by these sources become mandatory. These levels are set with a considerable safety margin before health effects to sensitive people would be expected. At 75, further cutbacks would be ordered, and at 100 all sources not essential to public health and safety could be ordered to cease operations.

During 1988, there was one incident in which the API reached or exceeded 32, occurring at the downtown station during November 25-27.

The 40-hour incident was a result of the classical lake breeze phenomenon, in which a warm southerly air mass was undercut by a cool northeast breeze off a cold Lake Ontario resulting in a temperature inversion.

There is high variability in the numbers of incidents each year. This variability is weather related, that is, the frequency of typical inversion conditions. However, there does appear to be a general decline in the frequency of these incidents.

4.3 Particulates

There are three basic types of instruments employed for the measurement of particles, each type relating to a different size range:

(a) Dustfall jars measuring heavy material, generally greater than 10 microns in diameter (one micron is one-millionth of a metre).
(b) High volume samplers measuring suspended particulates ranging in size from submicron to 50 microns.
(c) Co-efficient of haze tape samplers measuring mostly fine material - from submicron to about 10 microns.

The ambient air quality objectives for suspended particulate are based on health effects when occurring in combination with sulphur dioxide. As mentioned previously, this combination was proven to be indicative but not necessarily causative of such health effects. The dustfall objectives are based on nuisance effects while the soiling index objectives were derived from correlations with suspended particulate data.

4.3.1 Total Suspended Particulates

A high volume sampler draws a known volume of air through a pre-weighed filter for a 24 hour period (midnight to midnight). The exposed filter is weighed and the difference (weight of particulate matter on filter) in conjunction with the known air flow is expressed as a concentration in micrograms per cubic meter. The objective for a 24-hour average is 120 ug/m^3 while the yearly geometric mean objective is 60 ug/m^3.

At two locations in Hamilton, the Elgin/Kelly and Beach Blvd. stations, these samplers operated daily. At 17 other locations, they ran on a once every sixth day cycle, consistent with the practice in other North American jurisdictions. The Burlington station ran once every three days.

Suspended particulate data is summarized in Table 3a and shows a definite gradient of higher concentrations closer to the industrial area. Concentrations in 1988 were fairly similar to 1987 levels.

The overall trend in TSP since 1970 is shown in Figure 3, which displays a leveling off in concentrations since 1977, although a slight downward trend over these years is still evident. The trend curve for industrial emissions also shows a slight downward slope over this period. While the trends of TSP and emissions are similar, the magnitude of change is not, the emissions have decreased more than the TSP. This is probably because other pollution sources, which have not been lessened, had and continue to have an effect on the TSP, e.g. unquantified sources such as road dust, wind blown dust from unpaved areas etc.

Pollution roses (Figures 4-6) for 1981-88 suspended particulates were manually calculated for all stations by grouping the data according to predominant daily wind directions (as opposed to the hourly pollution rose computer program which classes hourly data). Only those days for which a clear predominant direction could be determined were included and rainfall/snowfall days were excluded. Since most of the stations operate once every sixth day, roses for a single year cannot be drawn due to an insufficient number of samples per year. A multi-year approach was therefore made. Most of the 14 roses indicate a strong correlationship of higher averages with winds from the industrial sector. Several of the roses indicate local non-industrial influences as well, such as road traffic.

The hi-vol filters were analyzed for seven metals, as well as sulphates and nitrates (Table 3b).

Concentrations of nickel, cadmium, lead and vanadium showed very low concentrations which did not vary appreciably throughout the city indicating that they were background levels. The 24-hour criteria for these metals were easily met. Starting in 1987, nickel averages showed an increase, but this is due to changes in data handling procedures rather than real change. Most of the samples recorded levels below the analytical detection limit. A change in how the computer handles these values affected the newer averages.

Concentrations of chromium and manganese showed a gradient with distance from the industrial area. However, even the highest levels were well below acceptable levels. A change in chromium averages is due to the same reasons as mentioned above for nickel.

Iron concentrations were high, and also showed a gradient with distance from the industrial area where concentrations were often well above general background levels, but usually below guideline values which are based on soiling effects.

The sulphate/nitrate components comprised a large portion of the measured particulate matter. These constituents are largely by-products of major high temperature fuel combustion sources and can travel hundreds of miles from their source. The concentrations in Hamilton are normally higher in the industrial area, indicating a contribution from local industries. However, in 1988, mountain station 29114 recorded the highest yearly mean, much higher than that of industrial zone station 29011.

Most of the City shows levels only moderately higher than other areas in the province including rural areas, indicating that much of this material is imported into the city via long range transport from distant sources. The sulphate/nitrate components are known to be a factor in reduced visibility[2] and are often responsible for the widespread haze observed in Hamilton during southerly winds.

With the exception of the mountain location, the sulphate/nitrate concentrations showed large decreases at most stations in 1988. The decrease in levels which are largely imported into the city, may indicate that a lesser amount of "background" particulate entered the city from distant sources. Sulphate/nitrate levels decreased throughout Southern Ontario in 1988.

It should be noted that the sulphate/nitrate analyses are subject to some error due to the measurement methodology. For this reason the data should be primarily used for evaluation of trends rather than use of the actual values. Alternative methodologies and filters are under investigation to improve the measurement technique. Tests with a new filter medium indicate that the glass fibre filter can cause as much as 8 ug/m^3 on average of spurious sulphate/nitrate formation from gaseous sulphur dioxide and nitrogen oxides. It is possible that the normally higher industrial area sulphate levels are related to this error, since gaseous sulphur dioxide and nitrogen oxide levels are somewhat higher there.

Hi-vol filters from four stations were analyzed for total carbon, elemental carbon and carbonate. Elemental carbon would include material such as coal, coke and kish, while total carbon would include numerous forms, both organic and inorganic in nature. Carbonate would include calcium carbonate (limestone) and dolomite. Sources of these carbonaceous materials would include coke ovens, blast furnaces, stockpiles, vehicle exhaust, biological materials and crushed stone.

Data are given in Table 3c and show a distinct gradient in concentration with distance from the industrial area. Levels were highest at 29011 (Burlington/Leeds) in the middle of the industries, followed by 29025 (Barton/Sanford) and 29102 (Beach Blvd.) on the fringes of the area followed by much lower levels at 29114 (Vickers/E18th) on the mountain. These higher particulate levels are a result of both direct emissions and contributions from traffic, particularly heavy truck traffic.

A contour map of suspended particulate concentrations is given in Figure 7. It can be seen that the majority of the city met the yearly objective of 60 ug/m^3. Concentrations were only elevated close to the industrial area. Once again it should be stressed that airborne particulate is not solely due to direct emissions from industrial sources. Dirty roadways and heavy truck traffic can also be contributors.

It should be realized that these contour maps of concentrations are not strictly a definitive representation of city wide air quality. Local influences affect some of the stations, and several more stations are required to fill in some gaps. One small contour drawn in Figure 7 does not have strict scientific validity. It is drawn to indicate that particular station was subject to local sources such as traffic and wind blown dust, unrepresentative of overall patterns.

Figure 7 reflects long term average conditions, and indicates a rather limited industrial contribution to suspended particulate levels throughout the city. A different situation exists during inversions accompanied by light northeast winds. Under inversion conditions, with poor dispersion, pollution from all sources, including traffic and industry, can accumulate and will contribute to the totals.

Figure 8 depicts suspended particulate contours during an elevated API incident on May 21. The map readily displays increased concentrations measured city-wide, diminishing with distance from the industrial complex. The contour is skewed toward the southwest reflecting the wind flow from the northeast. The industrial contribution is obvious on these occasions whether it be direct emissions, fugitive emissions or roadway sources inside or outside plants in the industrial area.

One other notable map for June 14, 1988 is given in Figure 9. This was a day of very strong southwest winds gusting up to 48 km/hr. TSP concentrations were high throughout Hamilton and were due to fugitive wind blown dust sources. As can be seen, contours ring the industrial zone, indicating the presence of fugitive dust sources there. Other stations also exhibited local effects. The Beach and Burlington/Leeds locations had the highest readings indicating that fugitive emissions need to be reduced in the industrial area.

In conclusion, the suspended particulate data indicate that the industrial area has an impact on the City, but that the effect is usually limited to a relatively small area near the mill sites. During inversion conditions, broader impacts are noted.

Most major sources in industry have now been controlled, and the remaining sources are being abated in compliance with Control Orders. These Orders include controls on Stelco's D blast furnace cast house. Dofasco has completed a control program at the No. 1 melt shop. Stelco will be required to upgrade controls on the sinter plant. Further upgrading of controls on the SWARU incinerator is proceeding. A Control Order has been served on Slater Steel to control particulate emissions and Canron Pipe will be upgrading their cupola pollution control equipment. Inside company properties, programs are in operation to control roadway sources of particulate. Roads have been paved and road cleaning is performed regularly. Better control of trackout to public streets still appears necessary, as well as improved cleaning of public streets. Landscaping of industrial properties has also been ongoing for some time in order to reduce wind blown dust.

TABLE 3a

SUSPENDED PARTICULATES - 1988
UNIT - MICROGRAMS PER CUBIC METER
unless otherwise specified

ONTARIO OBJECTIVES: 24 hour - 120
1-year Geo. Mean - 60

LOCATION	Geometric Mean 1986	Geometric Mean 1987	Geometric Mean 1988	Maximum 1988	%of Samples Above 120 1988
29000 - Elgin/Kelly	-	-	68	223	13
29009 - Kenilworth/Roxborough	61	60	49	132	2
29011 - Burlington/Leeds	110	99	98	236	32
29012 - Burlington/Wellington	66	59	56	150	9
29017 - Chatham/Frid	79	80	80	220	23
29025 - Barton/Sanford	75	76	81	192	16
29067 - 450 Hughson St. N.	51	46	48	124	2
29087 - Cumberland/Prospect	52	51	52	135	2
29089 - Barton/Nash	62	54	63	173	8
29098 - Bay/Main	52	51	44	138	3
29102 - Beach Blvd.	73	70	77	286	20

TABLE 3a - Continued

SUSPENDED PARTICULATES - 1988

UNIT - MICROGRAMS PER CUBIC METER
unless otherwise specified

ONTARIO OBJECTIVES: 24 hour - 120
1-year Geo. Mean - 60

LOCATION	Geometric Mean 1986	Geometric Mean 1987	Geometric Mean 1988	Maximum 1988	%of Samples Above 120 1988
29113 - Gertrude/Depew	87^9	84	81	189	23
29114 - Vickers/East 18th	45	53	48	102	0
29118 - Main W./Highway 403	47	52	43	154	2
29119 - Morley/Parkdale	96^{11}	104	90	225	21
29122 - Dundurn Castle	-	43	42	108	0
29124 - Laurier/Columbia	-	53^7	33*	64	0
29130 - Ewen/Whitney	-	40	39	222	6
29135 - Mt. Albion/Albright	-	43	34	87	0
44008 - Hwy 2/Northshore, Burlington	45	50	42	122	1

9 - Numerical exponent refers to number of months sampled when less than 12.
* - Station moved to 29124 from 29128 in mid-1988

TABLE 3b CONSTITUENTS IN SUSPENDED PARTICULATE (ug/m^3)

	Criterion:2.0(24 hours)			Criterion:1.5(24 hours)			Criterion:25.0(24 hours, Ferric Oxide)			Criterion:5.0(24 hours)			Criterion:2.5(24 hours)		
	CADMIUM			CHROMIUM			IRON			LEAD			MANGANESE		
Station and Year	# of Samples	Geo. Mean	Max.	# of Samples	Geo. Mean	Max.	# of Samples	Geo. Mean	Max.	# of Samples	Geo. Mean	Max.	# of Samples	Geo. Mean	Max.
29001/29098 Hughson/Hunter + Bay/Main															
1985	57	.001	.004	57	.001	.073	57	1.5	11.1	57	0.2	0.5	57	.09	.57
1986	59	.001	.017	59	.001	.084	59	1.7	38.0	59	0.2	1.1	59	.10	2.39
1987	55	.001	.012	55	.009	.040	55	1.5	13.1	55	0.1	0.4	55	.09	.68
1988	51	.000	.008	51	.006	.020	51	1.2	9.7	51	0.0	0.3	51	.06	.55
29008/29102 Beach Blvd.															
1985*	52	.001	.004	52	.002	.037	52	2.5	12.2	52	0.1	0.5	52	.18	.81
1986	57	.001	.006	57	.002	.033	57	3.0	10.0	57	0.2	0.6	57	.17	.87
1987	51	.001	.007	51	.012	.060	51	3.0	20.3	51	0.1	0.6	51	.19	1.40
1988	63	.001	.006	63	.012	.060	63	4.0	14.9	63	0.1	0.3	63	.27	.89
29011 Burlington/Leeds															
1985	58	.002	.005	58	.020	.092	58	5.4	23.2	58	0.3	0.7	58	.40	2.16
1986	59	.001	.004	60	.018	.067	60	4.9	24.9	60	0.2	0.7	60	.41	1.32
1987	57	.001	.007	57	.026	.120	57	5.1	32.5	57	0.2	0.4	57	.32	1.84
1988	52	.002	.017	52	.019	.130	52	5.4	21.4	52	0.2	0.8	52	.35	.91
29012 Burlington/ Wellington															
1985	58	.001	.022	58	.002	.052	58	2.1	6.0	58	0.2	0.5	58	.16	1.29
1986	59	.000	.003	59	.001	.023	59	1.2	10.8	59	0.1	0.5	59	.12	.91
1987	57	.001	.009	57	.010	.030	57	1.4	10.5	57	0.1	0.3	57	.11	.81
1988	56	.001	.023	56	.006	.020	56	1.5	8.0	56	0.1	0.3	56	.10	.55

*29008 moved to 29102 in 1985. + 29001 terminated at end of 1987.

TABLE 3b CONSTITUENTS IN SUSPENDED PARTICULATE (ug/m^3)

Station and Year	Criterion:2.0(24 hours) CADMIUM			Criterion:1.5(24 hours) CHROMIUM			Criterion:25.0(24 hours)-Ferric Oxide IRON			Criterion:5.0(24 hours) LEAD			Criterion:2.5(24 hours) MANGANESE		
	# of Samples	Geo. Mean	Max.	# of Samples	Geo. Mean	Max.	# of Samples	Geo. Mean	Max.	# of Samples	Geo. Mean	Max.	# of Samples	Geo. Mean	Max.
29017 Chatham/Frid															
1985	57	.001	.003	57	.001	.036	57	1.7	6.2	57	0.2	0.4	57	.09	.49
1986	57	.000	.002	57	.004	.035	57	2.4	12.8	57	0.2	0.7	57	.11	.47
1987	58	.000	.006	58	.009	.110	58	2.3	30.6	58	0.1	0.3	58	.12	.63
1988	54	.000	.004	54	.008	.030	54	2.2	7.4	54	0.0	0.5	54	.12	.43
29025 Barton/Sanford															
1985	51	.001	.006	51	.004	.309	51	1.5	14.9	51	0.3	1.1	51	.19	1.74
1986	55	.001	.004	55	.002	.086	55	2.8	26.8	55	0.3	1.0	55	.15	1.19
1987	53	.001	.013	53	.013	.200	53	2.5	29.6	53	0.2	1.2	53	.17	5.29
1988	43	.001	.004	43	.013	.110	43	2.7	17.6	43	0.1	0.4	43	.17	.96
29067 Hughson/Macauley															
1985	58	.001	.009	58	.001	.026	58	1.4	5.4	58	0.1	0.4	58	.09	.43
1986	58	.000	.003	58	.003	.028	58	1.0	11.6	58	0.1	0.5	58	.07	.50
1987	50	.001	.007	50	.012	.030	50	0.9	7.8	50	0.1	0.2	50	.06	.66
1988	54	.001	.005	54	.006	.020	54	1.2	7.2	54	0.1	0.2	54	.06	.43
29085/29114 Vickers/East 18															
1985	57	.001	.003	57	.001	.084	57	0.8	9.7	57	0.1	0.5	57	.06	.39
1986*	54	.001	.005	54	.001	.026	54	0.7	8.7	54	0.1	0.6	54	.05	.44
1987	55	.001	.007	55	.012	.060	55	1.1	22.1	55	0.1	0.5	55	.07	.90
1988	46	.000	.004	46	.006	.040	46	0.8	5.6	46	0.0	0.2	46	.04	.25

*29085 moved to 29114 at end of 1985

TABLE 3b CONSTITUENTS IN SUSPENDED PARTICULATE (ug/m^3)

	Criterion: 2.0(24 Hours)			Criterion: 2.0 (24 Hours)								
	NICKEL			VANADIUM			NITRATE			SULPHATE		
Station and Year	# of Samples	Geo. Mean	Max.	# of Samples	Geo. Mean	Max.	# of Samples	Geo. Mean	Max.	# of Samples	Geo. Mean	Max.
29001/29098 Hughson/Hunter + Bay/Main												
1985	57	.002	.015	57	.00	.04	57	3.1	10.0	57	6.9	16.2
1986	59	.001	.028	59	.00	.04	59	4.4	37.2	59	10.6	29.7
1987	55	.004	.020	55	.01	.06	56	4.2	16.1	56	10.5	20.8
1988	51	.006	.020	51	.01	.03	50	1.8	11.2	50	7.4	31.1
29008/29102 Beach Blvd.												
1985*	52	.003	.022	52	.00	.03	37	2.8	16.6	37	8.4	19.4
1986	57	.000	.025	57	.00	.04	57	3.5	18.8	57	10.9	39.7
1987	51	.006	.040	51	.01	.04	51	3.0	19.7	51	12.9	21.9
1988	63	.007	.020	51	.01	.05	50	3.2	34.2	50	10.7	33.7
29011 Burlington/Leeds												
1985	58	.004	.026	58	.00	.05	58	4.1	19.3	58	10.7	26.0
1986	60	.001	.024	60	.01	.04	60	4.1	36.4	60	12.3	43.4
1987	57	.006	.030	57	.01	.10	57	2.7	13.7	57	11.7	23.8
1988	52	.007	.030	52	.01	.04	51	2.3	11.2	51	8.4	38.2
29012 Burlington/ Wellington												
1985	58	.002	.059	58	.00	.03	57	4.3	14.9	57	9.2	21.7
1986	59	.000	.017	59	.00	.06	59	4.0	34.9	59	9.4	40.0
1987	57	.004	.020	57	.01	.07	57	3.1	12.0	57	8.7	19.3
1988	56	.006	.020	56	.01	.03	56	1.9	12.9	56	6.7	27.5

*29008 moved to 29102 in 1985. + 29001 terminated at end of 1987.

TABLE 3b CONSTITUENTS IN SUSPENDED PARTICULATE (ug/m^3)

Station and Year	Criterion: 2.0(24 Hours) NICKEL			Criterion: 2.0 (24 Hours) VANADIUM			NITRATE			SULPHATE		
	# of Samples	Geo. Mean	Max.	# of Samples	Geo. Mean	Max.	# of Samples	Geo. Mean	Max.	# of Samples	Geo. Mean	Max.
29017 Chatham/Frid												
1985	57	.004	.021	57	.00	.03	58	3.2	11.2	58	6.6	17.6
1986	57	.001	.022	57	.00	.14	57	3.5	11.5	57	9.2	44.0
1987	58	.005	.070	58	.01	.07	51	3.5	12.9	58	9.8	21.2
1988	54	.007	.030	54	.01	.03	54	2.0	9.3	54	6.5	29.9
29025 Barton/Sanford												
1985	51	.006	.040	51	.00	.04	52	3.3	14.7	52	8.4	18.9
1986	55	.001	.042	55	.00	.05	55	3.8	33.5	55	11.2	25.1
1987	53	.006	.060	53	.01	.14	54	3.9	17.6	54	13.0	40.9
1988	43	.007	.030	43	.02	.04	43	3.7	10.3	43	10.9	35.7
29067 Hughson/Macauley												
1985	58	.004	.039	58	.00	.03						
1986	58	.002	.020	58	.00	.02						
1987	50	.004	.010	50	.01	.03						
1988	54	.006	.030	54	.01	.04						
29085/29114 Vickers/East 18th												
1985	57	.001	.018	57	.00	.03	57	2.6	8.7	57	6.0	19.3
1986*	54	.003	.047	54	.00	.02	54	2.6	15.2	54	7.9	37.4
1987	55	.006	.120	55	.01	.09	56	4.6	12.5	56	11.6	24.4
1988	46	.006	.050	46	.01	.03	46	4.0	12.3	46	11.4	31.3

*29085 moved to 29114 at end of 1985

(cont'd.)

TABLE 3b CONSTITUENTS IN SUSPENDED PARTICULATE (ug/m^3) (continued)

Station and Year	Criterion: 2.0(24 Hours) NICKEL			Criterion: 2.0 (24 Hours) VANADIUM			NITRATE			SULPHATE		
	# of Samples	Geo. Mean	Max.	# of Samples	Geo. Mean	Max.	# of Samples	Geo. Mean	Max.	# of Samples	Geo. Mean	Max.
29087 Cumberland/ Prospect												
1985							56	3.0	11.3	56	7.3	20.4
1986							58	3.3	42.4	58	9.2	38.9
1987							57	3.2	14.5	57	10.1	18.6
1988							55	1.4	10.8	55	6.9	27.6
44008 Burlington- Hwy 2/Northshore												
1986							117	3.8	25.8	117	8.9	39.3
1987							101	4.0	15.1	117	10.5	51.2
1988							116	2.5	11.1	116	7.3	41.3

TABLE 3c

CARBON CONTENTS IN SUSPENDED PARTICULATES (ug/m³) - 1985-88

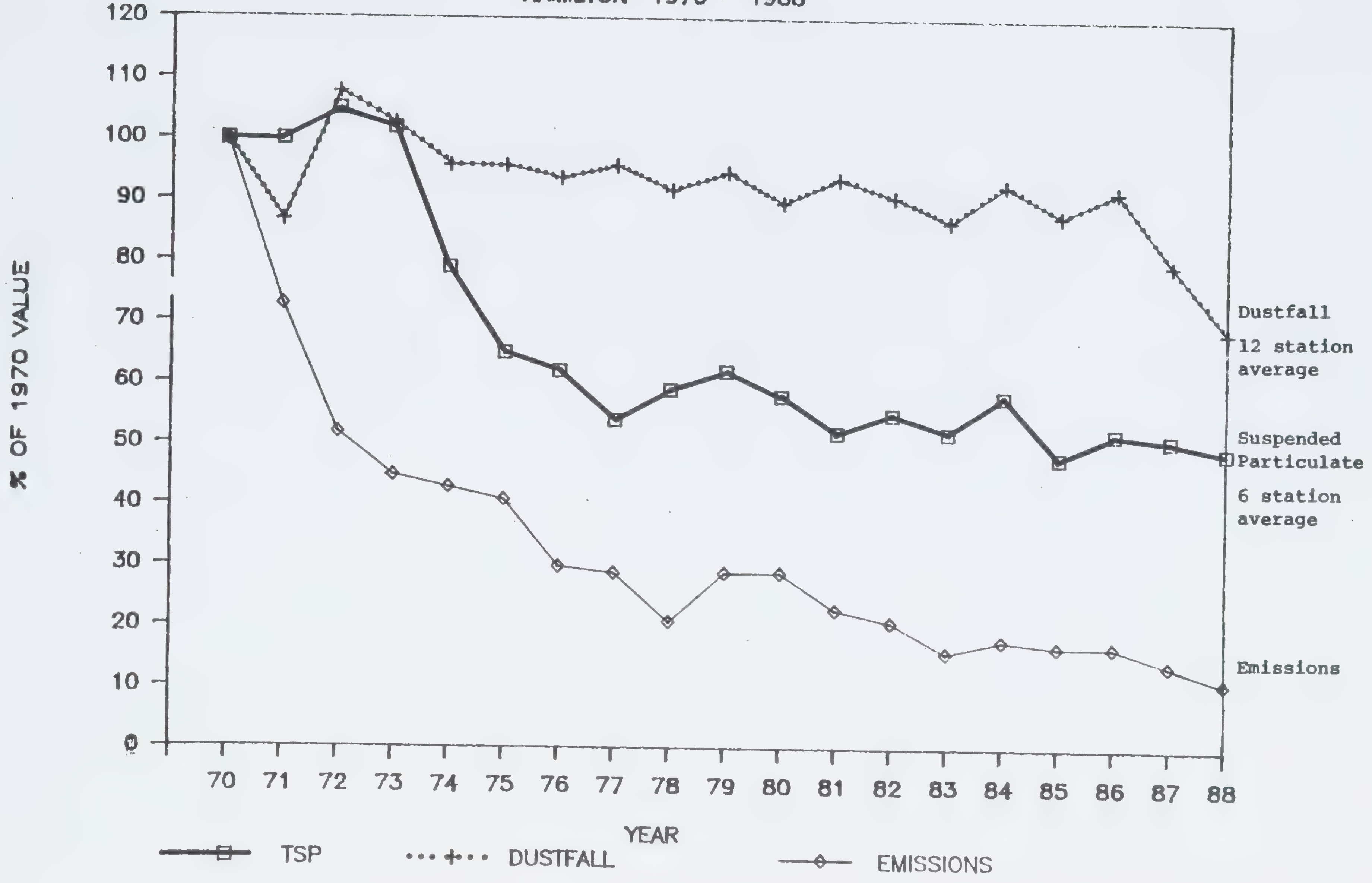
Station	Year	No. of Samples	TOTAL CARBON Geo.Mean	TOTAL CARBON Max.	ELEMENTAL CARBON Geo.Mean	ELEMENTAL CARBON Max.	CARBONATE (CO_3) Geo.Mean	CARBONATE (CO_3) Max.
29011 Burlington/Leeds	1985	58	13.7	35.2	5.0	18.1	1.3	11.3
	1986	54	11.7	45.6	3.9	18.0	1.2	10.5
	1987	57	10.8	40.0	3.6	17.0	0.7	7.5
	1988	52	11.4	33.4	3.5	16.7	1.0	4.1
29025 Barton/Sanford	1985	51	9.1	20.1	3.4	11.9	0.6	3.7
	1986	50	10.2	29.9	3.5	16.3	0.7	3.5
	1987	53	9.4	34.0	2.9	17.9	0.2	3.9
	1988	43	9.5	28.4	2.9	16.0	0.5	5.9
29085/29114 Vickers/East 18th	1985	55	5.9	18.9	1.8	8.9	0.4	2.5
	1986*	52	5.4	23.4	1.0	6.8	0.1	2.7
	1987	56	5.8	20.3	1.2	7.3	0.1	4.4
	1988	46	4.8	11.1	1.1	4.4	0.0	1.2
29102 Beach Blvd.	1985	52	9.4	27.5	3.4	14.0	0.4	2.2
	1986	49	8.5	20.6	3.5	13.5	0.3	9.4
	1987	51	7.1	24.1	2.6	11.2	0.1	3.3
	1988	50	9.0	29.1	3.4	11.7	0.2	1.5

* 29085 moved to 29114 at end of 1985

FIGURE 3

PARTICULATES/EMISSIONS TRENDS

HAMILTON 1970 – 1988



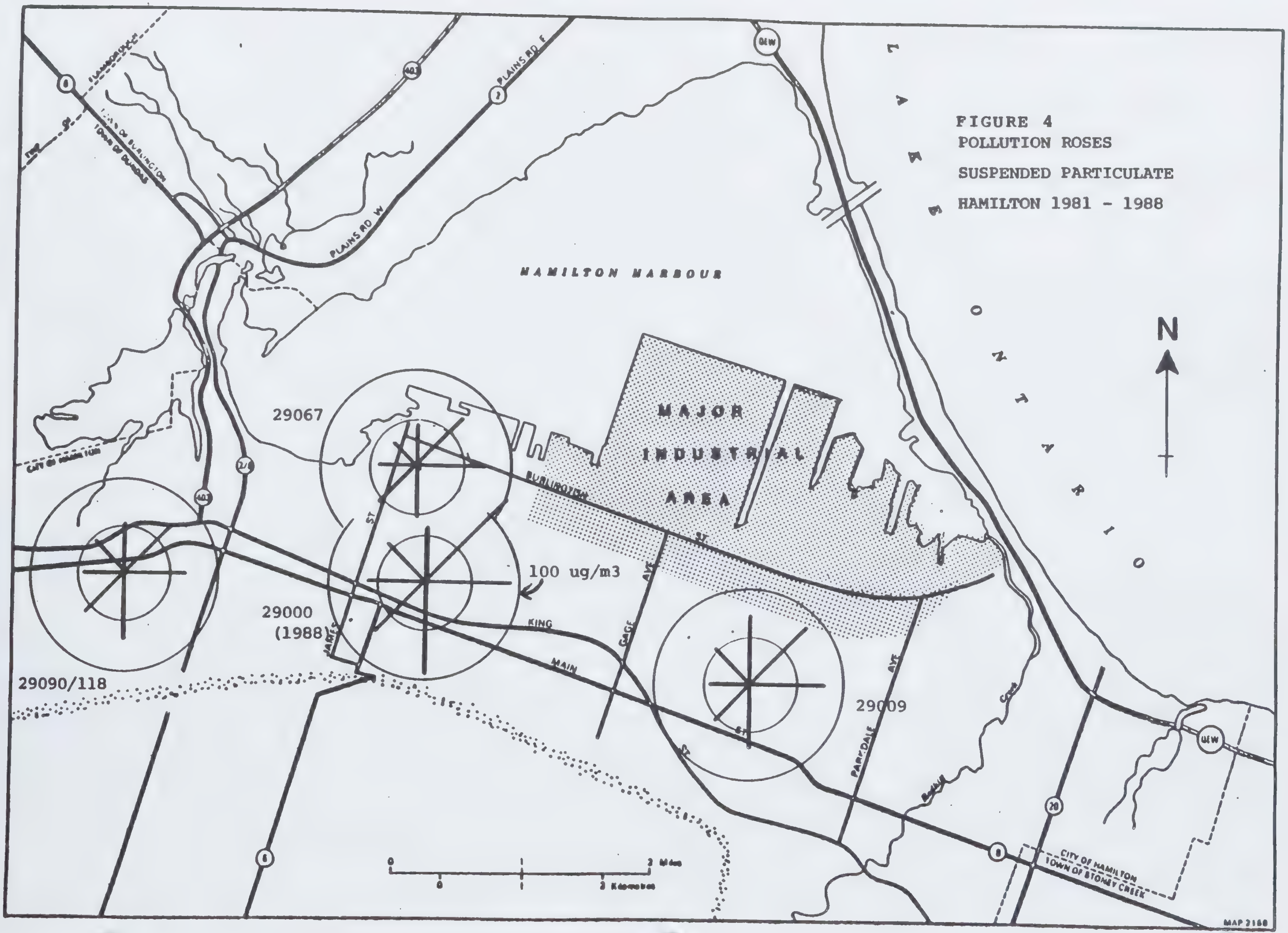


FIGURE 4
POLLUTION ROSES
SUSPENDED PARTICULATE
HAMILTON 1981 - 1988

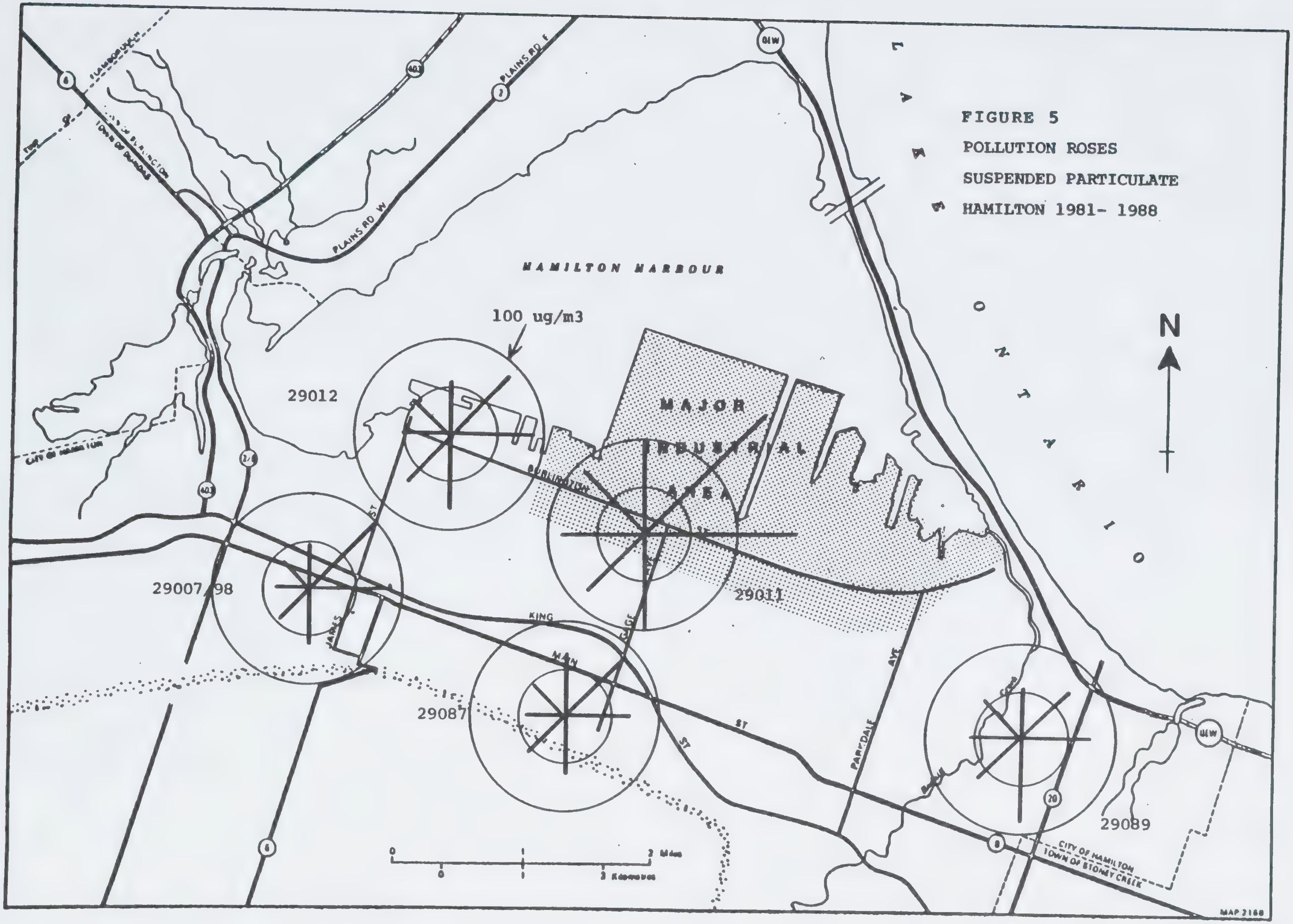


FIGURE 5
POLLUTION ROSES
SUSPENDED PARTICULATE
HAMILTON 1981- 1988

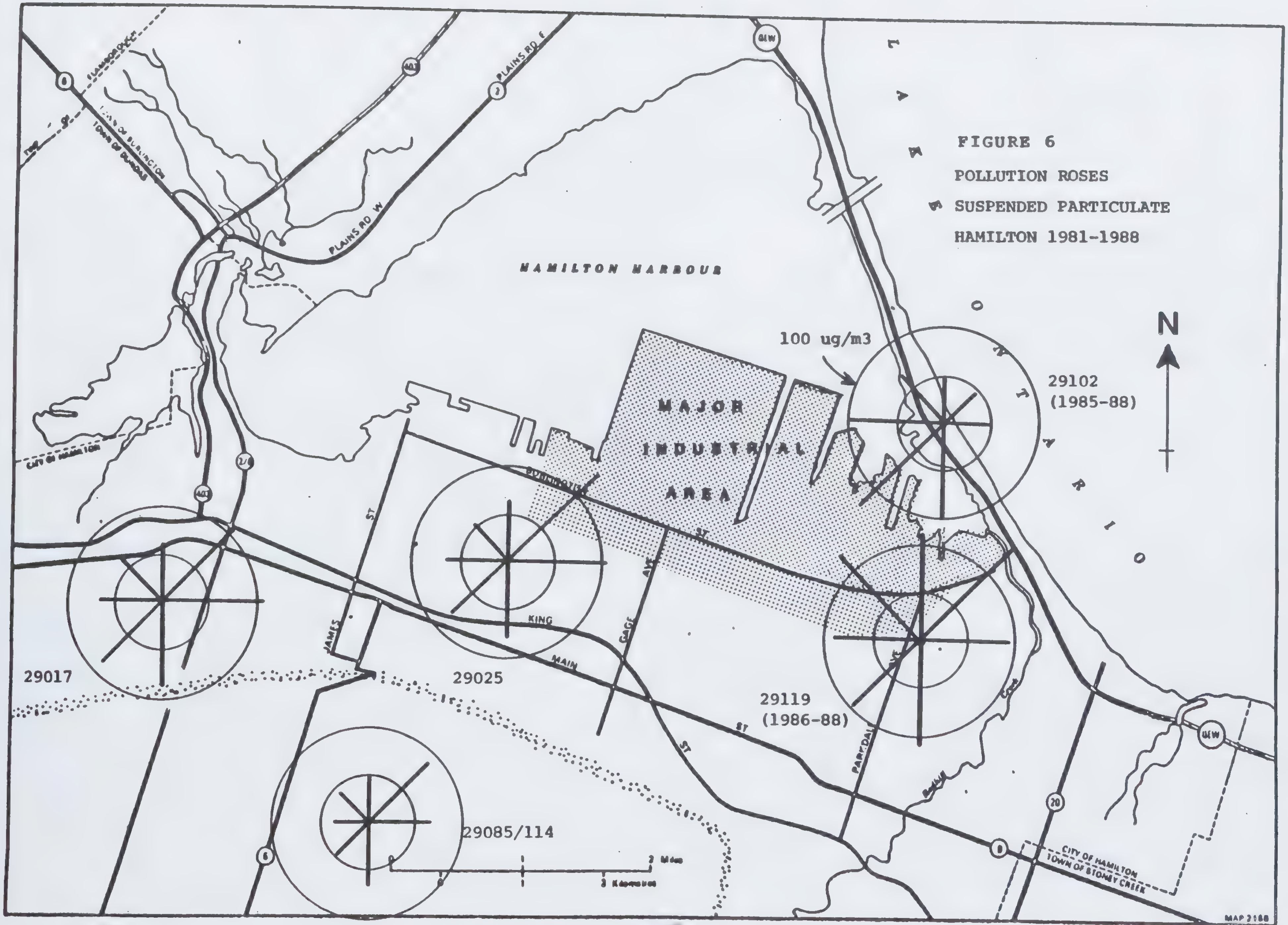


FIGURE 6
POLLUTION ROSES
SUSPENDED PARTICULATE
HAMILTON 1981-1988

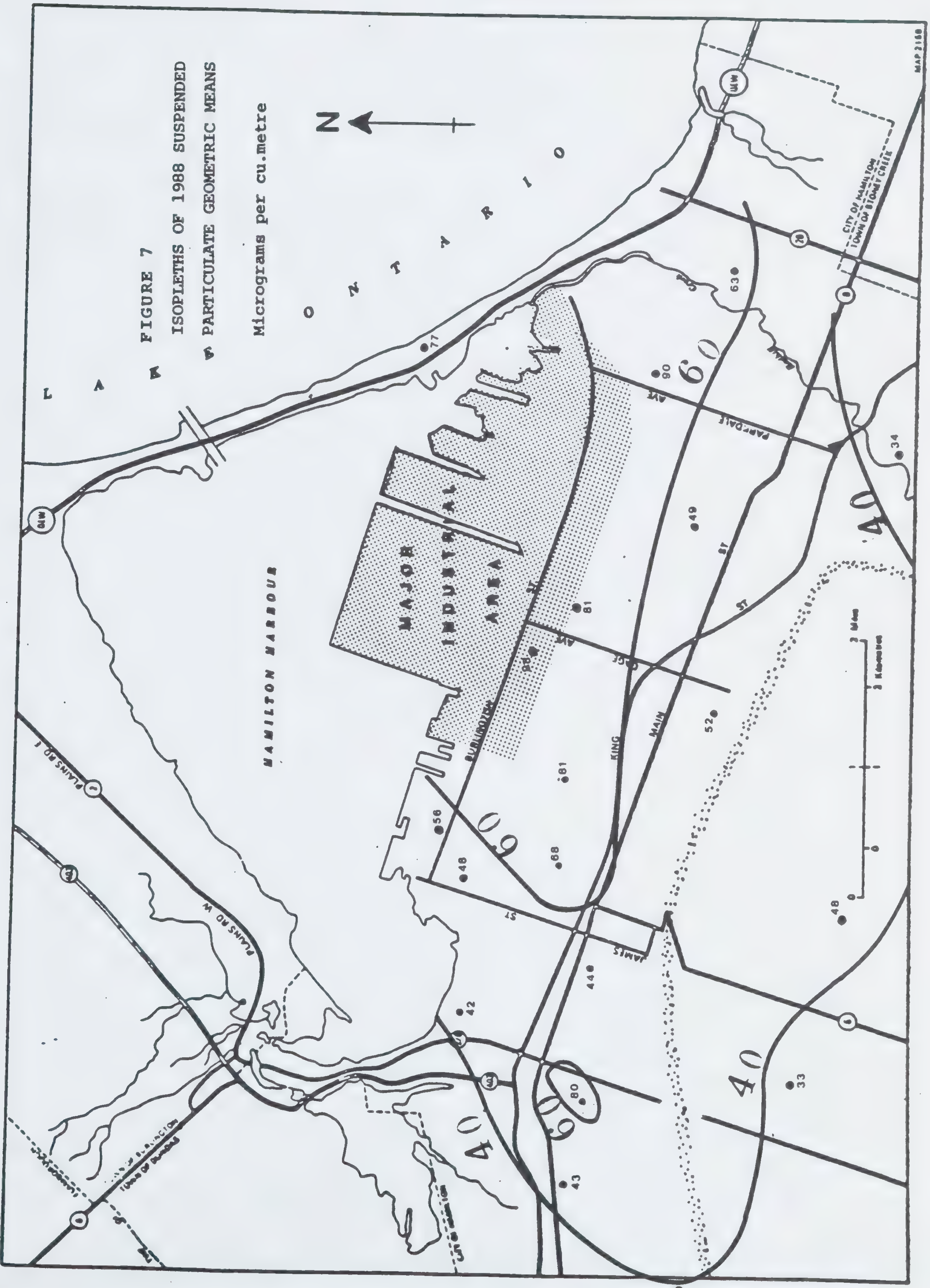


FIGURE 7

ISOPLETHS OF 1988 SUSPENDED PARTICULATE GEOMETRIC MEANS

Micrograms per cu.metre

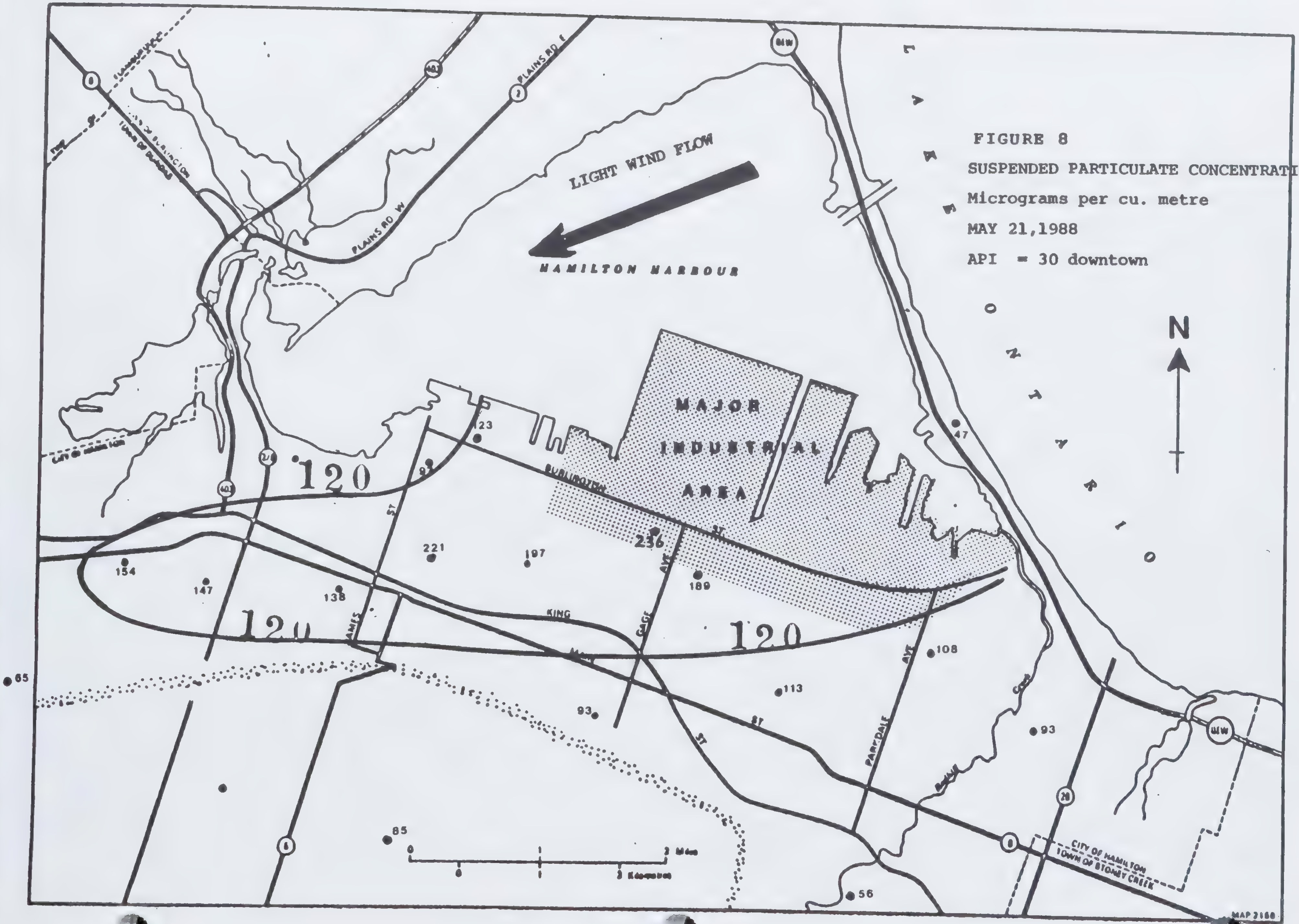


FIGURE 8

SUSPENDED PARTICULATE CONCENTRATIONS

Micrograms per cu. metre

MAY 21,1988

API = 30 downtown

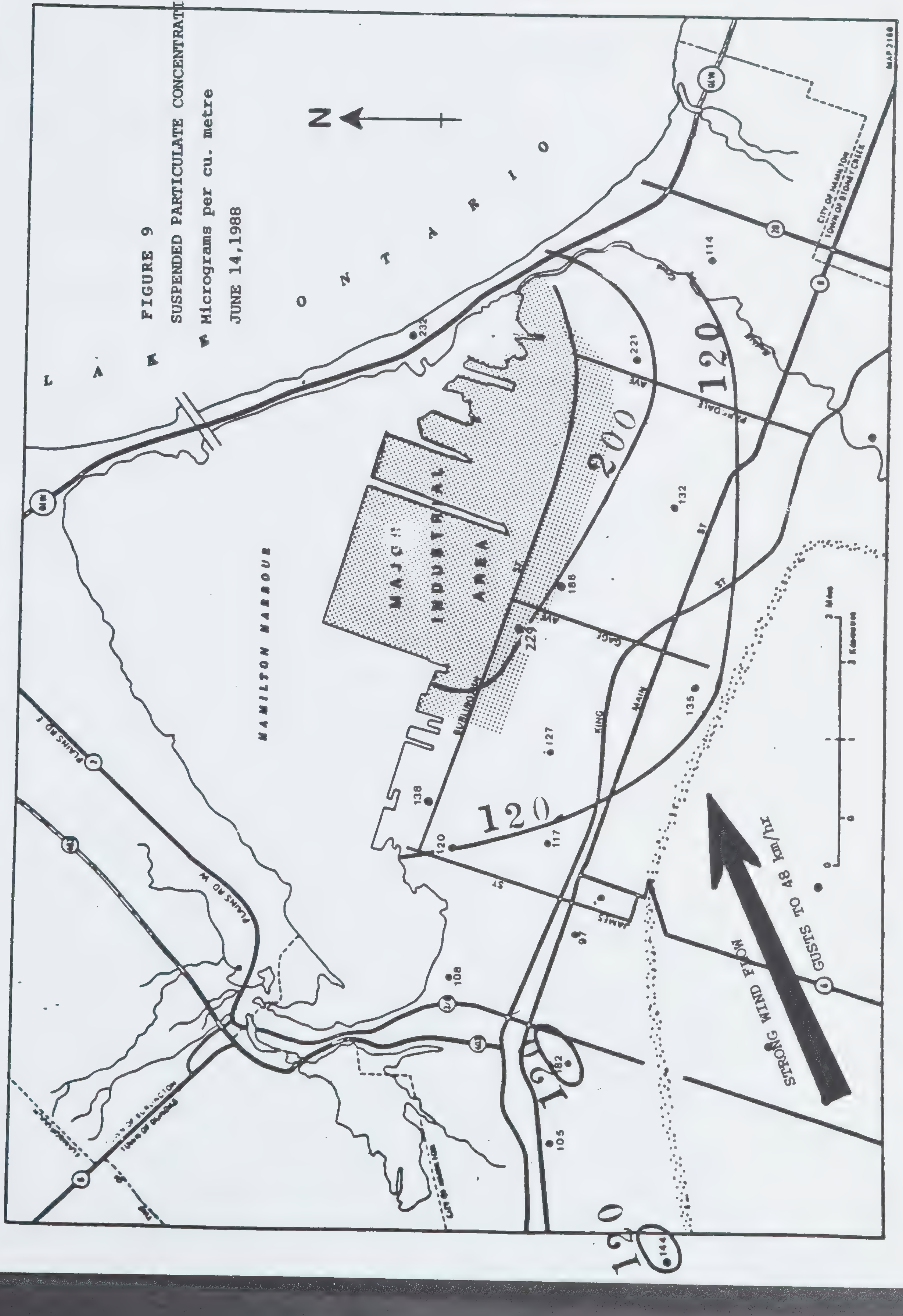


FIGURE 9
SUSPENDED PARTICULATE CONCENTRATIONS
● Micrograms per cu. metre
JUNE 14,1988

4.3.2 Soiling Index (Co-efficient of Haze)

Co-efficient of haze tape samplers operate continuously and determine hourly soiling values. Air is drawn through a filter paper, and the optical density of the soiled spot is measured by light transmittance. The instrument takes readings prior to and after sample collection. The resultant light obstruction is determined and transmitted on a real time basis to the data bank for the eight telemetered stations. Data are given in Table 4.

In 1988, concentrations were below the yearly objective at 6 of 8 stations. Only 29025 (Barton/Sanford) and 29001 (Hughson/Hunter) were slightly above the objective.

The daily objective was most frequently exceeded at Hughson/ Hunter - a total of 24 days, followed closely by Elgin/Kelly and Barton/Sanford.

Historical data are available only for the Beach and Barton stations and trend graphs for both are illustrated in Figure 10. Barton has fluctuated near the annual objective since 1972 while Beach dropped dramatically in 1985 to the present time. This drop coincided with the move of the Beach station from its old North Park location immediately adjacent to the Queen Elizabeth Way. This old location was obviously heavily affected by highway traffic. In 1984, the daily COH objective was exceeded 79 times at North Park, compared to only one time at the new Beach Blvd. location in 1986 and none at all in 1987 or 1988. This tends to indicate that the soiling index measurement predominantly measures vehicle traffic particulate when located close to a traffic artery. This would account for the fact that Barton/Sanford COH levels have decreased only a small amount since the early 1970's compared to the large decreases in industrial particulate emissions noted in Figure 3.

Soiling index pollution roses are given in Figure 11. While the downtown (29000, 29001) and Barton Street (29025) stations show the highest concentrations, and do show averages under northeast winds up to about 0.9 COHs, these concentrations were inflated by inversion-time measurements which were partly traffic related. The east 29105 (Nash/ Kentley), west 29118 (Main West) and mountain (29114 - Vickers/East 18th) stations generally did not show peaks pointing at the industries. The east station is remote from traffic, while the west station is adjacent to the Highway 403 cutoff. The southeast peaks at the station near the 403 point to this roadway. The mountain station, also remote from traffic showed low averages from most directions and a slight lower-city influence was noted for northeast winds. The Beach station, although closest to the industrial area, showed the lowest levels. It did continue to show southwest peaks (from industry). However, they were half of what they were at the old North Park station. The QEW and Beach Blvd. are still upwind during southwest winds but farther away. Peaks at rush hours were still evident in the data at Beach.

The AQI stations each recorded COH levels in the moderate or poor ranges (Table 2). Downtown (Elgin/Kelly) measured 82 moderate and 2 poor hours; east (Nash/Kentley) measured 18 moderate hours; west (Main West) measured 36 moderate hours; mountain (Vickers) measured 9 moderate hours and the Burlington station measured 33 moderate hours. Most of these readings occurred during morning rush hours, although the west station tended to measure high levels in late evening hours. Traffic was probably a major contributor in these readings.

It is important to note that while traffic appears to affect the soiling index measurement more than industry, industrial emissions may still be contributing. Other fine particulate monitors measuring particles less than 10 microns have been used on an experimental basis. They correlate fairly well to suspended particulate results, while soiling index correlates poorly. This is probably explained by the fact that the other fine particle samplers and suspended particulate methodologies involve weight determinations, while the soiling index uses the light scattering properties of particles. The soiling index measurement however, must be retained because it is the only practical method for measuring hourly concentrations.

TABLE 4

SOILING INDEX

1-HOUR TELEMETERED INSTRUMENTS

UNITS - COH's per 1000 linear ft. of air

Ontario Objectives - 24-hour - 1.0
1-year - 0.5

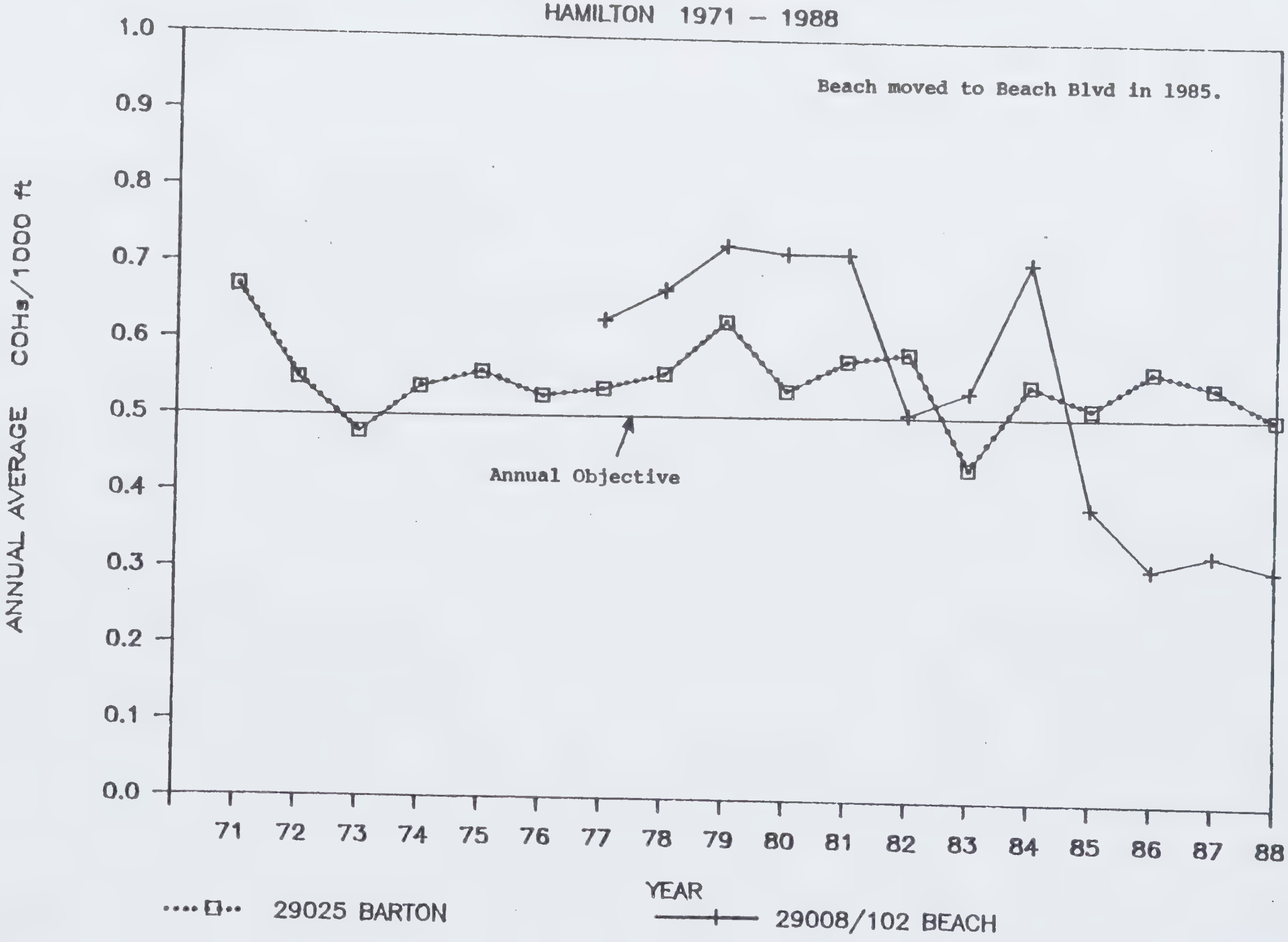
		Annual Average	Maximum 24-hour	No. of Times Above Objective 24-hour
29000 - Elgin/Kelly	1988	.46	2.2	20
	1987	$.45^{9}$	1.8	7
29001 - Hughson/Hunter	1988	.54	2.3	24
	1987	.49	1.9	11
	1986	.50	1.7	10
29102 Beach Blvd.	1988	.23	1.0	0
	1987	.33	1.0	0
	1986	.31	1.3	1
29025 - Barton/Sanford	1988	.51	1.6	19
	1987	.55	1.8	15
	1986	.57	1.6	27
29105 - Nash/Kentley	1988	.31	1.4	2
	1987	.40	1.3	2
	1986	.38	1.1	1
29114 - Vickers/East 18th	1988	.29	1.2	4
	1987	.36	1.4	4
	1986	.33	1.2	3
29118 - Main W./Hwy. 403 1987	1988	.37	1.4	9
	1987	.42	1.6	9
	1986	.41	1.6	9
44008 - Hwy 2/North Shore, Burlington	1988	$.44^{7}$	1.4	7

9 - Numerical exponent refers to number of months sampled when less than 12.

FIGURE 10

SOILING INDEX YEARLY TREND

HAMILTON 1971 – 1988



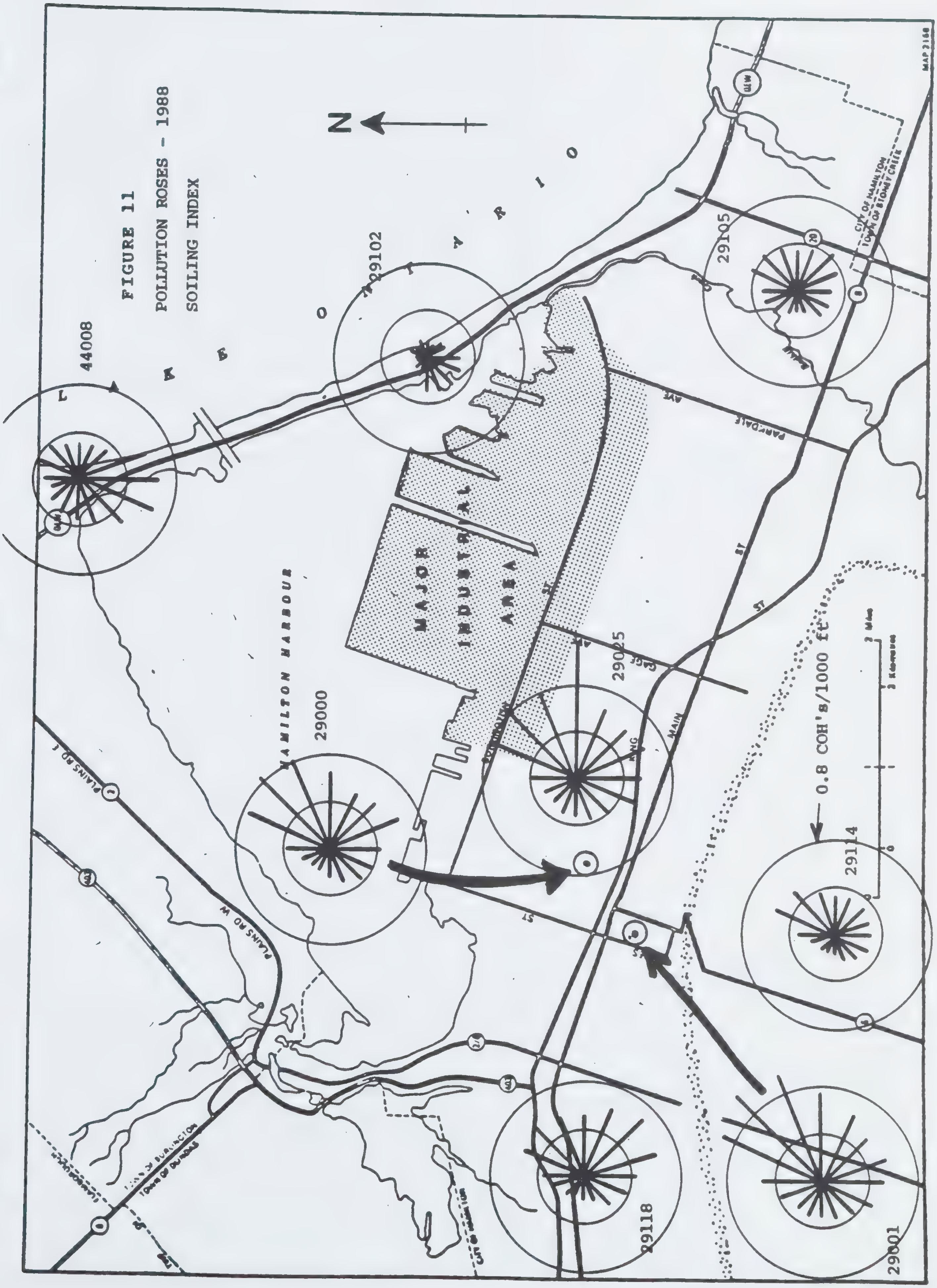


FIGURE 11

POLLUTION ROSES - 1988

SOILING INDEX

4.3.3 Dustfall

Dustfall is that material which settles out of the atmosphere by gravity. It is collected in plastic containers during a 30 day exposure time. The collected material is weighed and expressed as a deposition rate of grams/square meter/30 days. The significance of observations is restricted to relatively local areas and dustfall objectives are based on visible deposit of dust rather than health effects.

Dustfall levels in 1988 (Table 5) decreased from previous years. Figure 12 depicts dustfall isopleths, and shows that a small portion of the lower city near the industrial area was encompassed by the 9.0 grams/m^2/30 days contour which represents twice the objective. Conditions in this area were quite poor. As with the suspended particulate contour maps, the dustfall contour map in Figure 12 is not strictly a definitive representation of conditions city wide. Local influences affect some of the stations and the measurement is rather imprecise. As well, a small contour drawn in Figure 12 has no scientific validity. It is drawn to indicate that particular station was subject to local influences, unrepresentative of general patterns.

Three additional samplers were located near existing stations to determine the representativeness of the old stations - in case there are undue local traffic effects. In all three cases, the new stations located on quiet side streets measured lower levels, below the yearly objective in two cases, and barely over in the other. The 29217 - Chatham/ Fanning location confirmed that the high readings at 29017 - Chatham/Frid were very localized. The 29230 - Cameo location also confirmed an impact of traffic on 29030 - Camden/Mohawk. The 29231 - Audrey station revealed lower levels than 29031 - Concession/Upper Sherman.

Significantly lower levels were recorded progressively in 1987 and 1988 throughout the City, such that on average, dustfall has decreased by 25% from 1986 levels which in turn had remained relatively unchanged since the 1970's. In 1988, 7 of the 18 stations were below the annual objective. Figure 3 displays the recent dustfall improvements following many years when levels remained virtually unchanged throughout the 1970's and 1980's. The absence of change in dustfall over the earlier years was surprising given the reductions in industrial process emissions and the correspondingly large reductions in suspended particulate concentrations noted in the same graph. Fugitive dust sources such as road dust, stock piles, unpaved areas, vehicle emissions, etc. are probably important in explaining this observation. The recent reductions represent the first significant improvement in dustfall levels.

As mentioned, road traffic is a major source of the dust at several of the stations. At Ottawa Street (29010), construction activities at Dofasco have resulted in extremely high concentrations being observed, of which a large portion can probably be ascribed to increased heavy truck traffic and quantity of dirt tracked onto the street near the station. The station at Chatham/Frid (29017) is also significantly affected by local fugitive sources such as road traffic and unpaved lots.

The recent improvements cannot be ascribed to any single initiative. City staff have modified road cleaning practices. Industry has continued control efforts such as the use of chemical sealants, road paving and road washing and planting of vegetation to control fugitive dust emissions. Past measurements on company properties indicated that fugitive dust emissions were considerable. There have also been improvements in control of industrial point sources. All of the above control efforts must be maintained and expanded to achieve further improvements. These may include measures to reduce dirt trackout onto streets and increased planting of vegetation. Continued efforts by both industry and the municipality will be necessary.

TABLE 5

DUSTFALL 1988

Ontario Objectives - 1 month avg - 7.0
1 year ave - 4.5

UNITS - GRAMS/SQ. METRE/30 DAYS

	Annual Average 1986	1987	1988	Maximum 1988	Number of Months Above Objective 1988
29001 Hughson/Hunter	6.2	5.3	4.4	6.9	0
29006 Queenston	6.4	5.7	4.4	8.9	1
29009 Kenilworth	4.6	4.0	3.7	6.5	0
29010 Burlington/Ottawa	19.9	19.7	16.2	29.3	12
29011 Burlington/Leeds	14.1	12.4	9.7	14.5	10
29012 Burlington/Wellington	8.8	6.8	6.1	9.1	3
29017 Chatham/Frid	9.7	9.9	8.1	10.6	10
29217 Chatham/Fanning	-	3.1[7]	4.6	13.5	1
29025 Barton/Sanford	5.9	5.0	4.6	9.1	1
29030 Camden/Mohawk	5.1	5.2	3.8	8.2	1
29230 Cameo Ave	-	3.9[6]	3.4	7.4	1
29031 Concession/Upper Sherman	7.1	5.5	5.0	8.5	1
29231 Audrey/East 27th	-	4.8[6]	3.5	6.5	0
29036 Roosevelt/Beach Rd.	18.8	15.3	14.1	16.7	12
29044 Wark/Beach Blvd.	9.3	6.7	7.4	13.0	5
29082 Leaside Rd.	8.1	7.5	6.5	12.2	4
29084 Rembe/Beach Blvd.	10.2	8.9	6.8	11.4	5
29102 Beach Blvd.	5.6	4.2	3.5	7.6	1

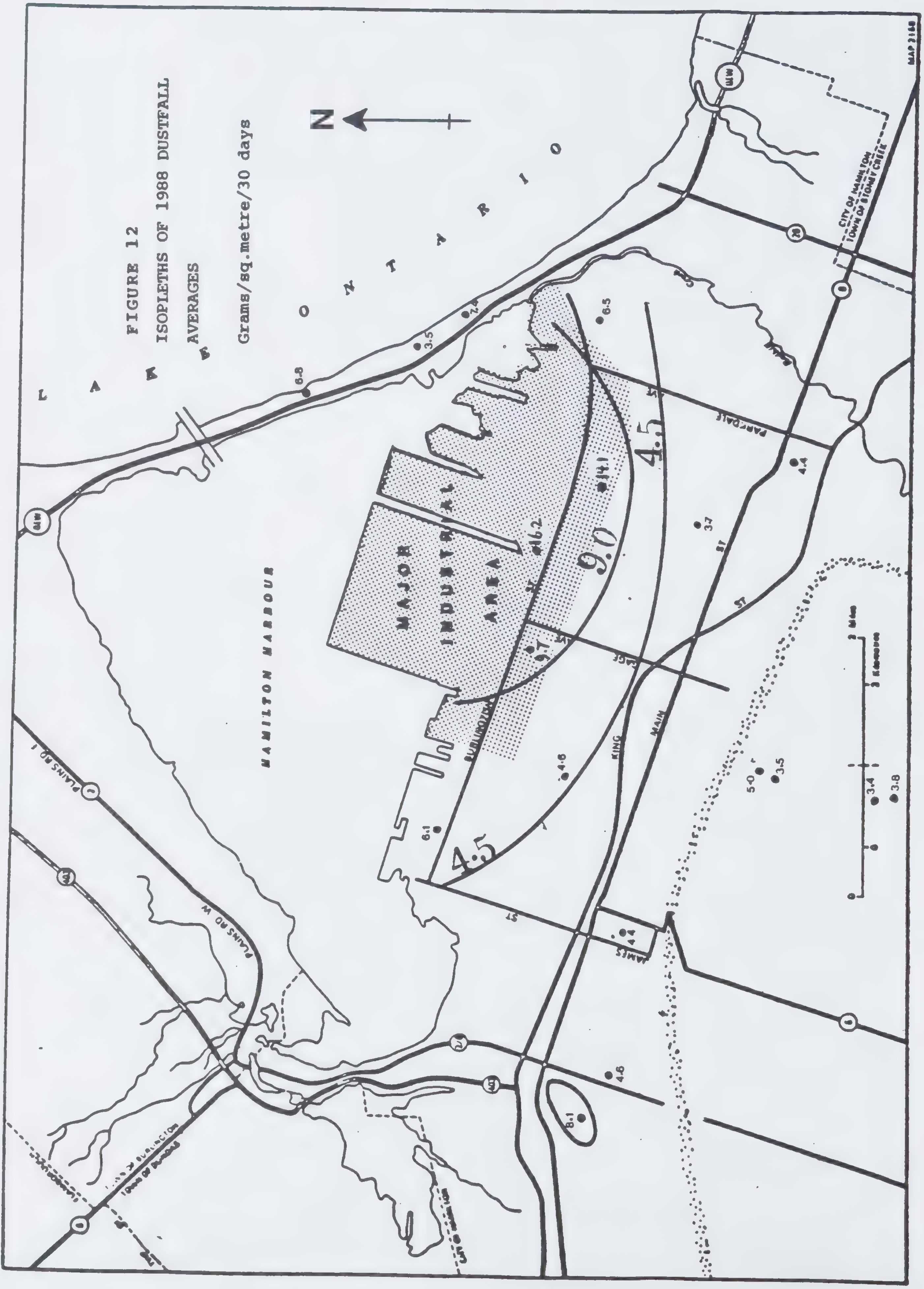


FIGURE 12
ISOPLETHS OF 1988 DUSTFALL AVERAGES
Grams/sq.metre/30 days

4.4 Sulphur Dioxide

Most sulphur dioxide (SO_2) emissions in Hamilton stem from industrial sources. A smaller portion is accounted for by fuel burning in domestic space heating. Data for six stations are summarized in Table 6, which lists objective values that are based on vegetation damage (hourly and yearly) and health effects in conjunction with suspended particulate (daily).

Sulphur dioxide trends from the Barton and Beach stations since 1970 are illustrated in Figure 13. In 1988, as in the past several years, the concentrations were acceptable based on the yearly, daily and hourly objectives. Virtually all readings at all five AQI stations fell in the very good range of the AQI.

The pollution roses for the stations given in Figure 14 confirm that the industrial area is the prime source of SO_2 in the city. The east, west and Burlington stations show only small industrial influence. The mountain station recorded levels fairly similar to the downtown stations except that the northeast peaks were smaller.

TABLE 6

SULPHUR DIOXIDE

UNITS - PARTS PER MILLION

Ontario Objectives: 1-hour - .25
24-hour - .10
1-year - .02

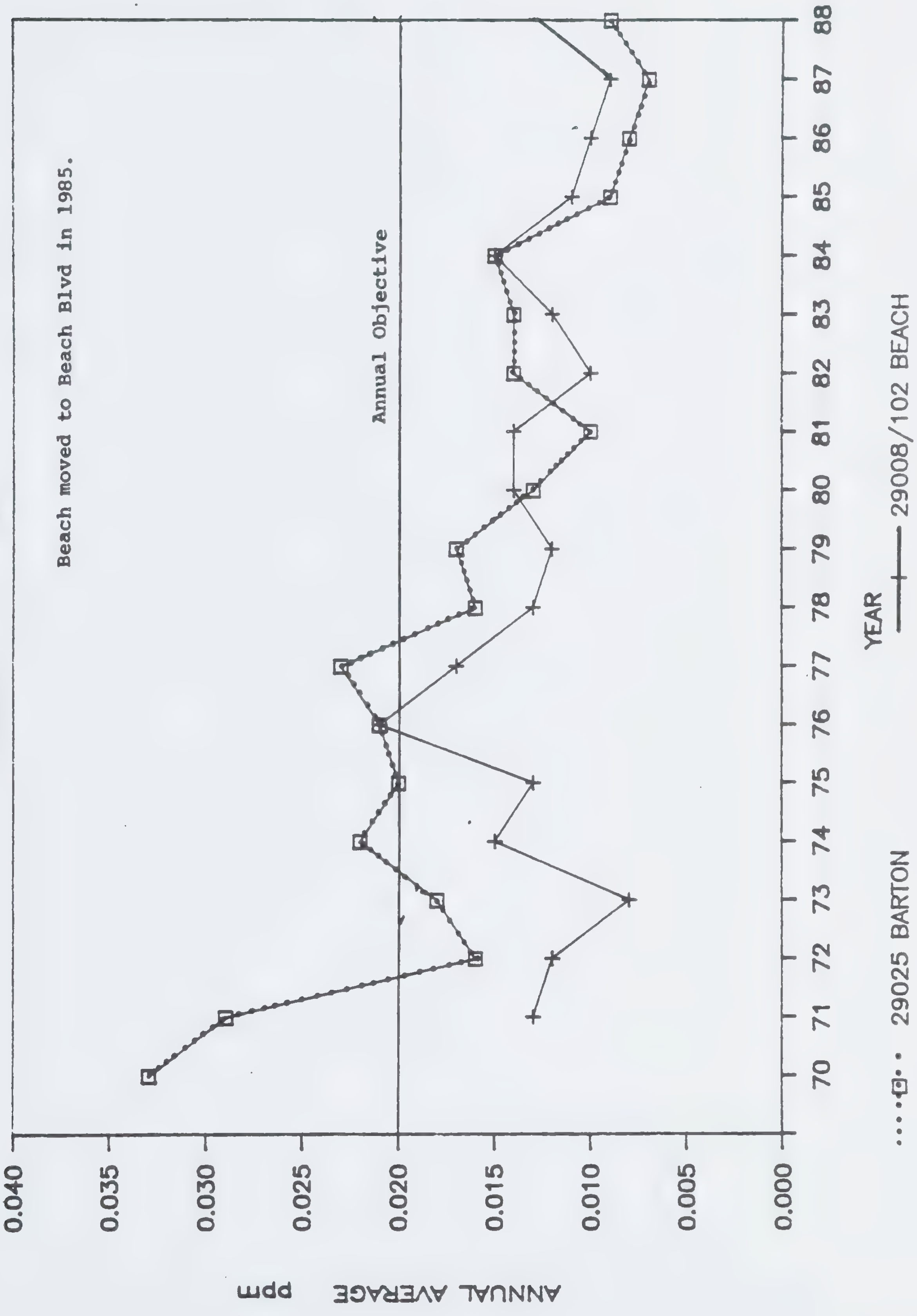
Station	Year	Annual Average	Maximum 1-hour	Maximum 24-hour	No. of Times Above Objective 1-hour	No. of Times Above Objective 24-hour
29000 - Elgin/Kelly	1988	.008	.18	.05	0	0
	1987	.009	.24	.06	0	0
29102 - Beach Blvd.	1988	.013	.17	.07	0	0
	1987	.009	.17	.05	0	0
	1986	.010	.12	.07	0	0
	1985	.011	.12	.06	0	0
29025 - Barton/ Sanford	1988	.009	.15	.04	0	0
	1987	.007	.15	.04	0	0
	1986	.008	.14	.05	0	0
	1985	.009	.11	.06	0	0
29105 - Nash/ Kentley	1988	.005	.11	.03	0	0
	1987	.005	.14	.03	0	0
	1986	.006	.11	.03	0	0
	1985	.004	.16	.02	0	0
29114 - Vickers/ East 18th	1988	.007	.13	.04	0	0
	1987	.008	.36	.06	1	0
	1986	.009	.11	.05	0	0
29118 - Main W./ Hwy. 403	1988	.005	.11	.03	0	0
	1987	.006	.19	.03	0	0
	1986	.007	.24	.04	0	0
	1985	.005[6]	.06	.03	0	0
44008 - Hwy 2/N.Sh. Burlington	1988	.004	.20	.03	0	0
	1987	.004	.21	.05	0	0
	1986	.004	.08	.03	0	0
	1985	.004	.11	.03	0	0

[6] - Six months of sampling (July - December).

FIGURE 13

SULPHUR DIOXIDE YEARLY TREND

HAMILTON 1971 – 1988



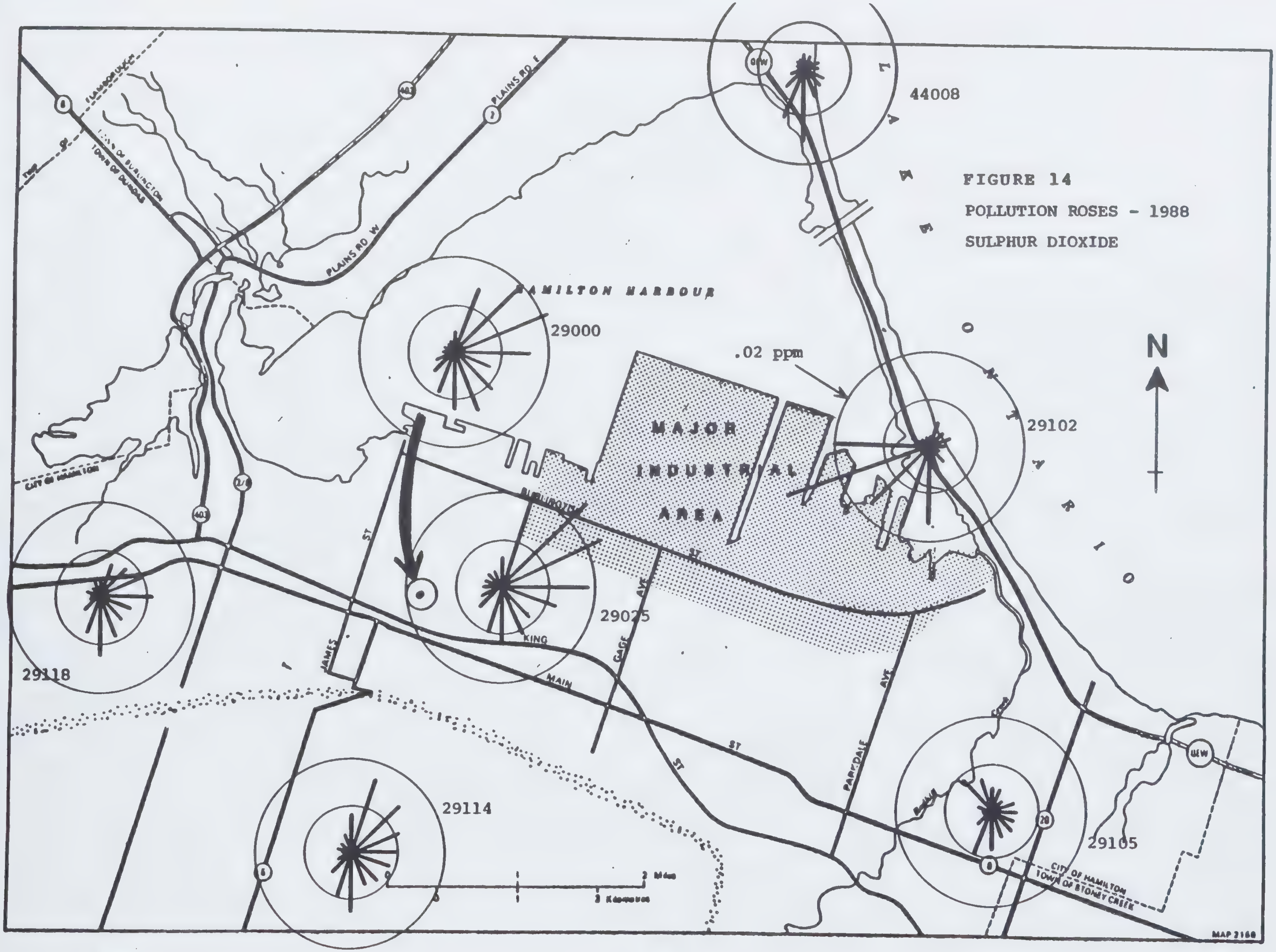


FIGURE 14
POLLUTION ROSES - 1988
SULPHUR DIOXIDE

4.5 Total Reduced Sulphur

These gases are comprised of hydrogen sulphide (H_2S), the "rotten egg" gas and other sulphur compounds and the mixture is referred to as total reduced sulphur (TRS). There are no general objectives for TRS. However, an hourly objective for H_2S of 20 ppb may be compared to the observed values since most emissions are thought to consist mainly of H_2S. The data given in Table 7 are also compared to the 10 ppb level - an approximate odour threshold for H_2S. TRS was measured at four stations - Barton, Elgin, Beach and the mountain.

The major sources of hydrogen sulphide and related sulphur compounds are the steel industry's coke ovens and related by-products operations, certain slag quenching processes, a tar plant and under upset conditions, a local manufacturer of carbon black. The sewage treatment plant is another potential source of odours but only during upset conditions.

In 1988, levels remained relatively similar to 1987 following the dramatic improvements recorded in that year. This improvement was related to Stelco Inc. replacing direct contact coolers in the coke oven by-product area with indirect coolers in April, 1987. The Barton station measured only 20 hours above 10 ppb (last seven months) in 1988 compared to 106 hours in 1986. The mountain station measured only 26 such hours (all in the moderate range of the AQI) in 1988 compared to 46 hours in the final 3 months of 1986, when the instrument was first installed. The new Elgin/Kelly station downtown commenced TRS measurements in February 1987 and measured only 18 hours over 10 ppb in 1988, all in the moderate range of the AQI.

Figure 15 displays the trend of 10 ppb exceedences per year at the Barton and Beach stations. The Barton station clearly shows a decreasing trend during the 1980's with a dramatic decrease observed in 1987.

A gradual decline is also evident in the graph for Beach Blvd. but that location did not show improvements in recent years. In fact, levels have been increasing since 1985. It is worth noting that the station was moved 1 km south, closer to Dofasco in 1985 and more in line with prevailing winds from that company. Stelco's effect on the Beach is limited by distance. The Beach station recorded 234 hours over 10 ppb in 1988 compared to 134 hours in 1987. Hourly data indicate that Dofasco Ltd. was the prime source affecting the Beach station. That company has been experimenting with methods of reducing emissions from slag quenching. The Carbochem plant and Stelco also affected the Beach area but to a much lesser degree. Those companies are now operating under Control Orders.

Not surprisingly, the TRS pollution roses for the four stations given in Figure 16 point strongly toward the industrial area. New analysis techniques involving the use of five minute averaged data now permit back-tracing of odorous levels, assisting in locating the sources of the elevated ambient concentrations. This will allow the Ministry to plan the most effective abatement strategies.

In addition to the Carbochem Control Order, the Ministry will continue to work with both Stelco and Dofasco to further reduce their TRS emissions.

TABLE 7

TOTAL REDUCED SULPHUR

UNITS - PARTS PER BILLION

Ontario Objective: 1-hour - 20 (Hydrogen Sulphide)

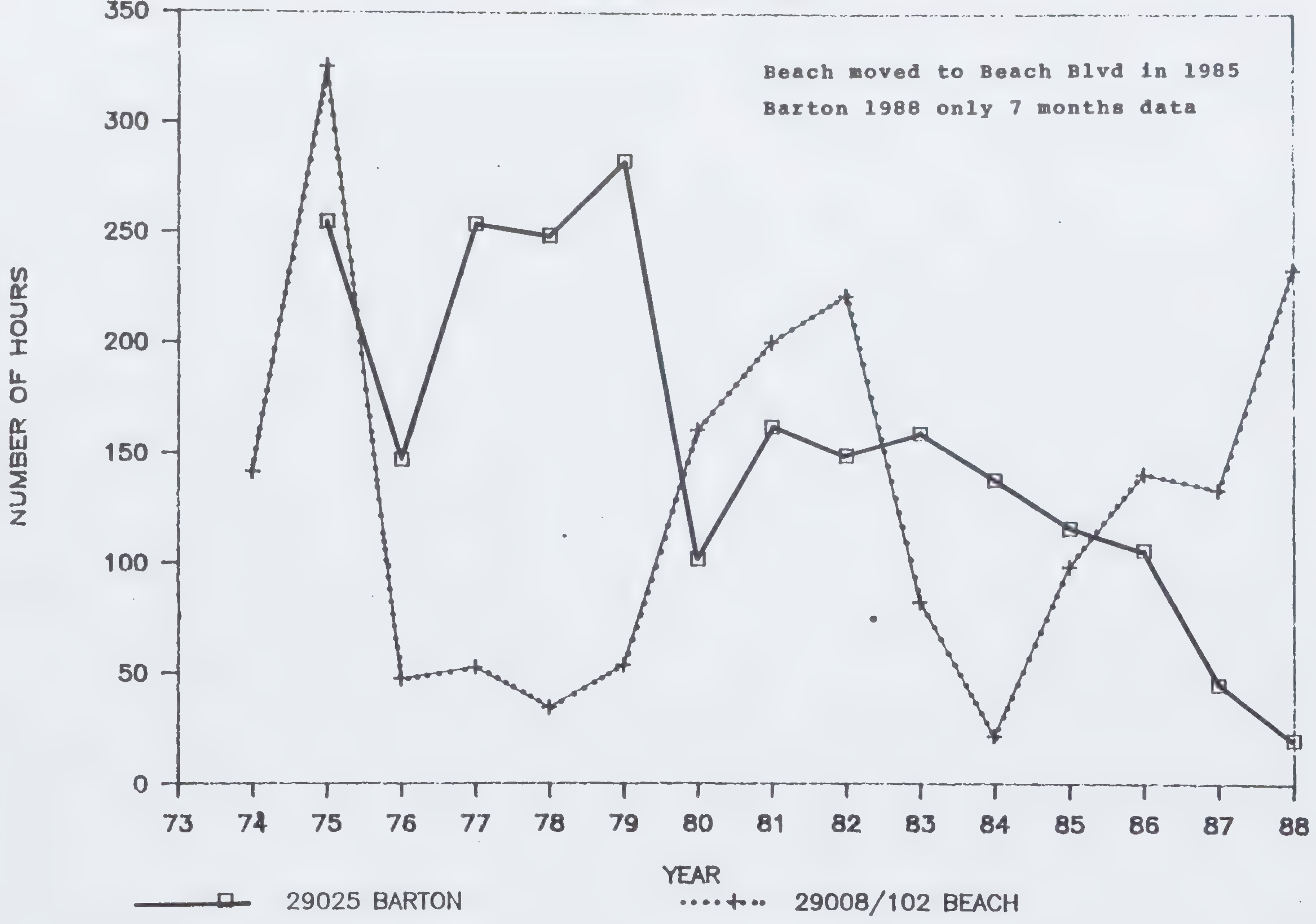
		Annual Average	Maximum	Number of Hours Above 10ppb	Number of Hours Above 20ppb
29000 - Elgin/Kelly	1988	0.8	21	18	1
	1987	0.8^{11}	14	12	0
29102 - Beach Blvd.	1988	2.5	54	234	30
	1987	1.6	33	134	15
	1986	1.3	42	141	18
	1985	1.0	37	99	15
29025 - Barton/ Sanford	1988	0.9^{7}	16	20	0
	1987	0.9	30	45	6
	1986	1.4	64	106	12
	1985	1.4	56	116	16
29114 - Vickers/ East 18th	1988	1.2	17	26	0
	1987	0.8	19	21	0
	1986	0.9^{3}	24	42	4

^{11} - Numerical exponent refers to number of months sampled when less than 12.

FIGURE 15

TRS EXCEEDENCE TREND — HAMILTON

HOURS OVER 10 PPB



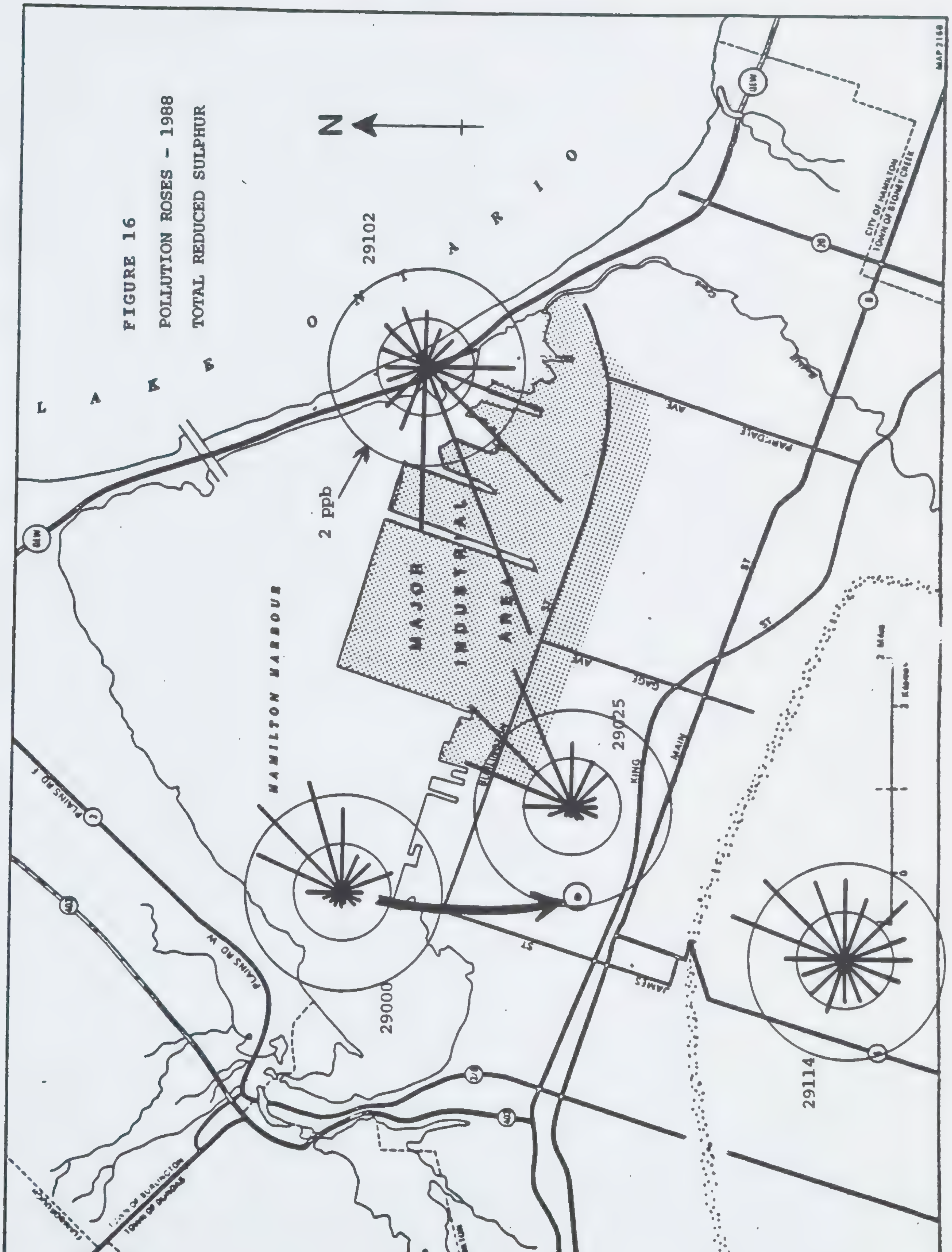


FIGURE 16

POLLUTION ROSES - 1988

TOTAL REDUCED SULPHUR

4.6 Carbon Monoxide

The major source of carbon monoxide is the automobile although there are also some contributions from industry. Due to automotive emission controls, the levels measured at Barton Street (moved to Elgin/Kelly in 1987) decreased greatly since the 1970's (Figure 17). In 1988, the levels were similar to the previous few years and were well below the objectives which are based on health effects. Data are given in Table 8. All downtown and Burlington AQI readings (both 1-hour and 8-hour) fell in the very good range.

A carbon monoxide analyzer was installed in the North Park station in January 1984. Concentrations at North Park throughout 1984 and at Beach Blvd. in 1985-88 were lower than at Barton Street and Elgin, explained by the fact that the high speed traffic on the QEW generates less carbon monoxide than the low speed traffic on Barton Street[3], and that the Beach Blvd. traffic load is much less than Barton Street - almost half[4]. Concentrations did increase somewhat in 1988 at Beach. In Burlington, levels were comparable to the Beach station.

The pollution roses given in Figure 18 indicate that concentrations at the new Elgin/Kelly and Burlington stations were uniform for all wind directions, while Beach Blvd.'s highest averages (albeit very low) were from the southwest.

TABLE 8

CARBON MONOXIDE

UNITS - PARTS PER MILLION

Ontario Objective: 1-hour - 30
8-hour - 13

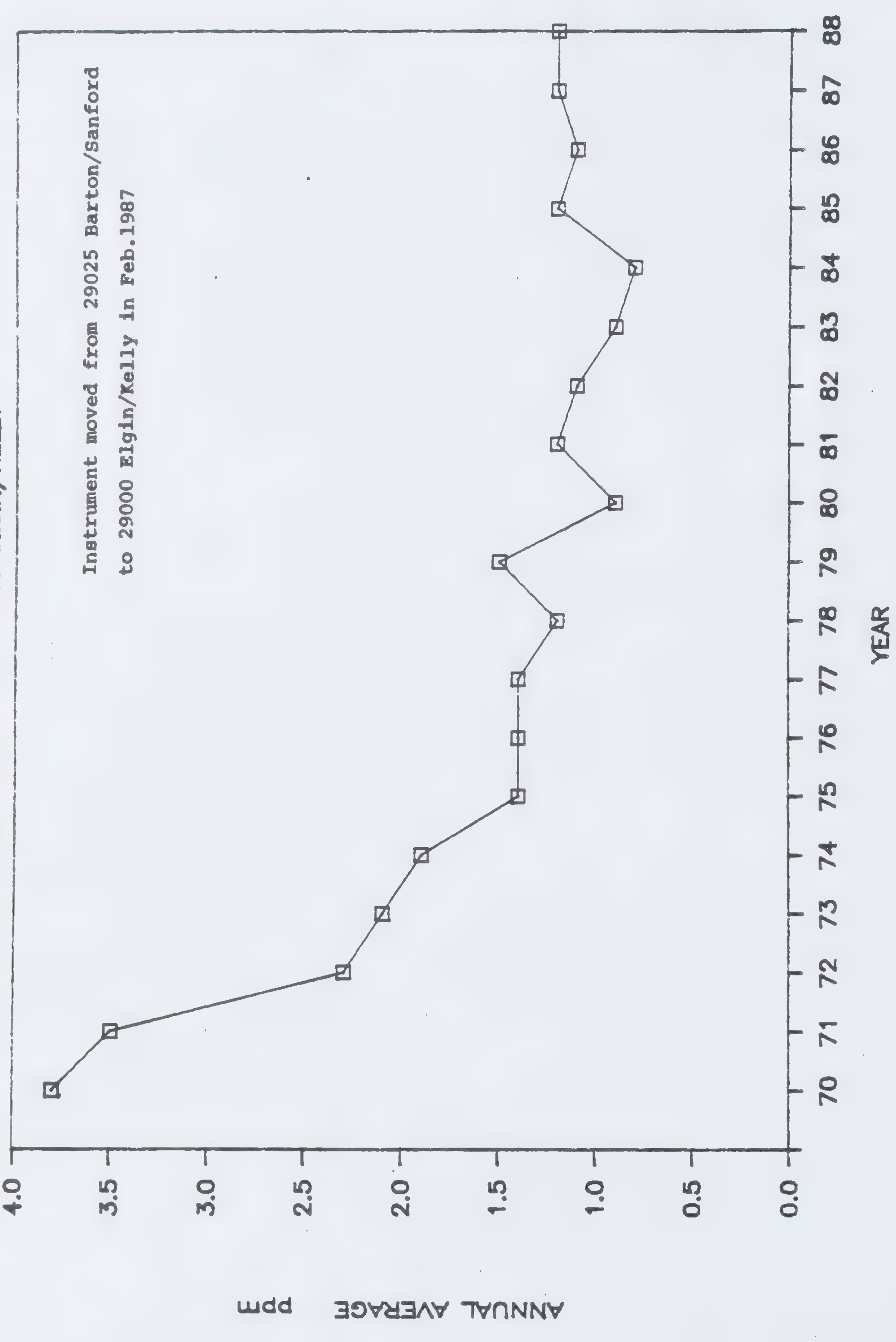
Station	Year	Annual Average	Maximum 1-hour	Maximum 8-hour	No. of Times Above Objective 1-hour	No. of Times Above Objective 8-hour
29102 - Beach Blvd.	1988	0.7	12	3	0	0
	1987	0.3	10	3	0	0
	1986	0.3	7	2	0	0
	1985	0.3	7	3	0	0
29000 - Elgin/Kelly	1988	1.2	11	5	0	0
29025 - Barton/	1987*	1.2	8	5	0	0
Sanford	1986	1.1	12	6	0	0
	1985	1.2	10	4	0	0
44008 - Hwy 2/N.Sh.	1988	0.7	12	3	0	0
Burlington	1987	1.0	9	5	0	0
	1986	1.0	11	4	0	0
	1985	1.1	7	3	0	0

*29025 moved to 29000 in February 1987.

FIGURE 17

CARBON MONOXIDE YEARLY TREND

29025 BARTON & 29000 ELGIN/KELLY



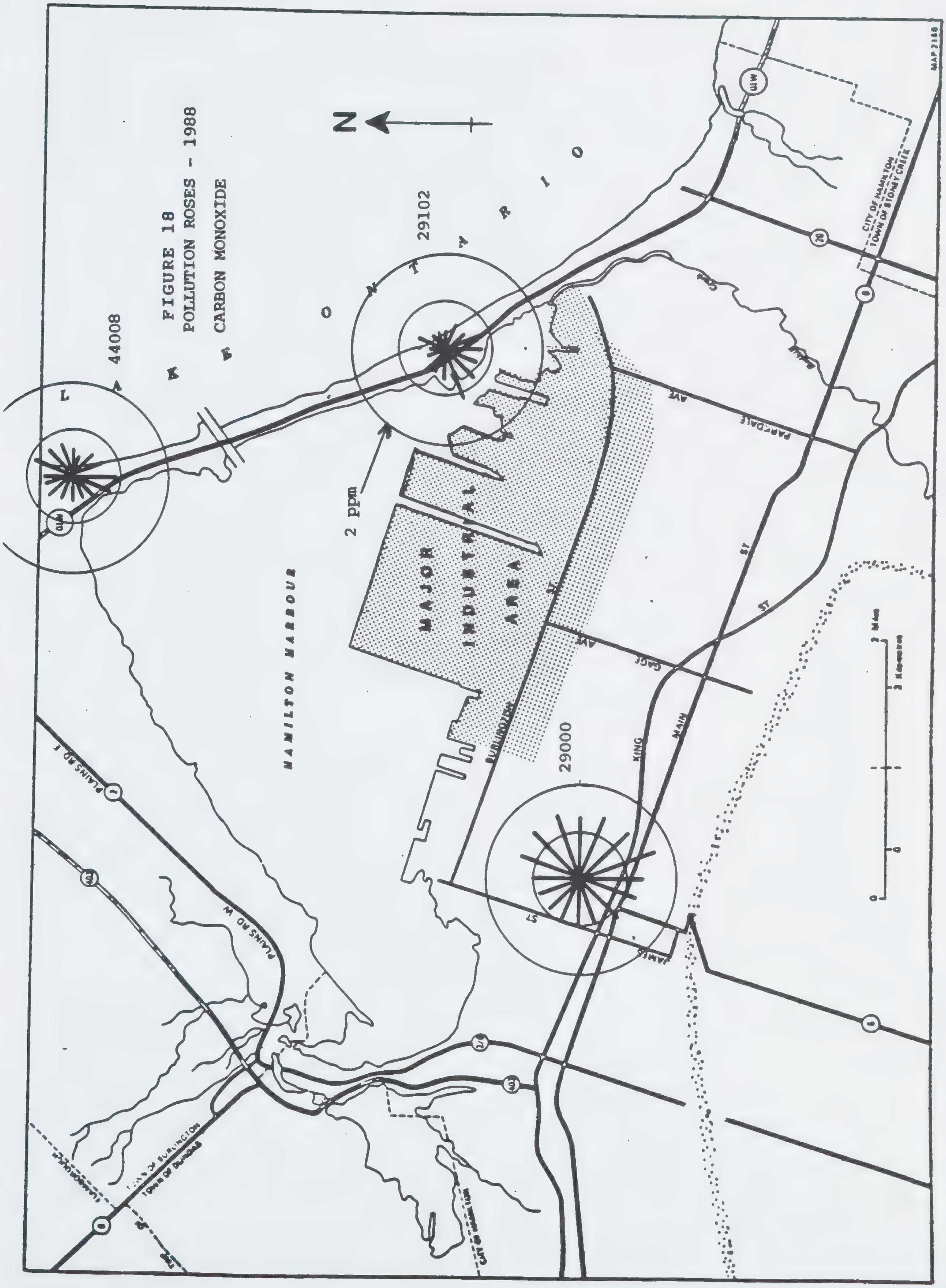


FIGURE 18
POLLUTION ROSES - 1988
CARBON MONOXIDE

4.7 Oxides of Nitrogen

The primary source of oxides of nitrogen are high temperature combustion sources including the automobile. The most abundant oxides are nitric oxide (NO) and nitrogen dioxide (NO_2). Nitric oxide is a direct emission which is then oxidized in the atmosphere to form nitrogen dioxide. Both pollutants were monitored continuously at Elgin/Kelly, Main West, Beach Blvd. and Burlington. At each station, a single instrument makes measurements of NO, NO_2 and total nitrogen oxides. Nitric oxide is measured directly, and the total oxides are measured by internally converting all other nitrogen oxides to nitric oxide. The instrument then determines nitrogen dioxide to be the difference between the first two measurements.

Objectives exist only for nitrogen dioxide and these are based on odour threshold levels (hourly) and health effects (24-hourly). Other adverse effects occurring at much higher levels include vegetation damage, reduced visibility and corrosion of metals. The objectives were not exceeded in 1988, similar to previous years.

Data for nitrogen dioxide are given in Table 9 and yearly trends since 1975 are illustrated in Figure 19. Both Barton and Beach stations showed similar concentrations to previous years and similar to the west end site 29118 on Main Street West, and the Burlington station. A leveling off in concentrations at the two established stations is evident although a small decline is still occurring.

Data for nitric oxide are given in Table 10 and yearly trends for Beach and Barton (moved to Elgin) are given in Figure 21. Note the abrupt decrease in levels at Beach following the move to 29102 in 1985. The station is now much less affected by vehicle emissions. The new Main Street West site recorded higher levels in 1988 than the other three; it is being affected by traffic on Main Street West and the Highway 403 cutoff.

Pollution roses for the two measurements are given in Figures 20 and 22. The roses for NO_2 (Figure 20) do not indicate a dominant directional influence. It is clear from Figure 22 that NO levels at all stations were due mostly to traffic.

Highest NO levels were measured at 29118 (Main West), and the largest peaks point towards the Highway 403 cutoff and Main Street West. Elgin/Kelly also shows highest levels for southeast/northeast, probably from Wilson and Cannon Streets. The southwest peaks for 29102 (Beach Blvd.) point mainly to Beach Blvd. and the QEW, although the industries are also upwind, while Burlington's small peaks point at the QEW.

Oxides of nitrogen are also an important factor in the photochemical cycle of ozone in the atmosphere. This will be discussed in the next section of this report.

TABLE 9

NITROGEN DIOXIDE

UNITS - PARTS PER MILLION

Ontario Objectives: 1-hour - .20
24-hour - .10

		Annual Average	Maximum 1-hour	Maximum 24-hour	No. of Times Above Objective 1-hour	No. of Times Above Objective 24-hour
29102 - Beach Blvd.	1988	.025	.11	.06	0	0
	1987	.022	.11	.06	0	0
	1986	.023	.12	~~.12~~ .05	0	0
	1985	.023	.08	.06	0	0
29000 - Elgin/Kelly	1988	.024	.13	.07	0	0
	1987*	.027	.16	.06	0	0
	1986	.027	.10	.07	0	0
29025 - Barton/ Sanford	1985	.025	.11	.06	0	0
29118 - Main W./ Hwy. 403	1988	.021	.11	.06	0	0
	1987	.018	.10	.07	0	0
	1986	.018	.12	.08	0	0
	1985	.019[6]	.08	.04	0	0
44008 - Hwy 2/N.Sh. Burlington	1988	.023	.15	.05	0	0
	1987	.021	.11	.07	0	0
	1986	.021	.09	.05	0	0
	1985	.025	.09	.06	0	0

6 - Six months of sampling (July - December).
* - 29025 moved to 29000 in February 1987.

TABLE 10

NITRIC OXIDE

UNITS - PARTS PER MILLION

		Annual Average	Maximum 1-hour	Maximum 24-hour
29102 - Beach Blvd.	1988	.023	.31	.12
	1987	.021	.42	.14
	1986	.023	.47	.23
	1985	.020	.51	.09
29000 - Elgin/Kelly 29025 - Barton/ Sanford	1988	.017	.56	.23
	1987*	.017	.47	.15
	1986	.021	.50	.15
	1985	.019	.51	.11
29118 - Main W./ Hwy. 403	1988	.031	.91	.24
	1987	.034	.57	.22
	1986	.029	.53	.20
	1985	$.033^{6}$	.92	.15
44008 - Hwy 2/N.Sh. Burlington	1988	.018	.48	.13
	1987	.023	.62	.22
	1986	.020	.64	.13
	1985	.026	.73	.13

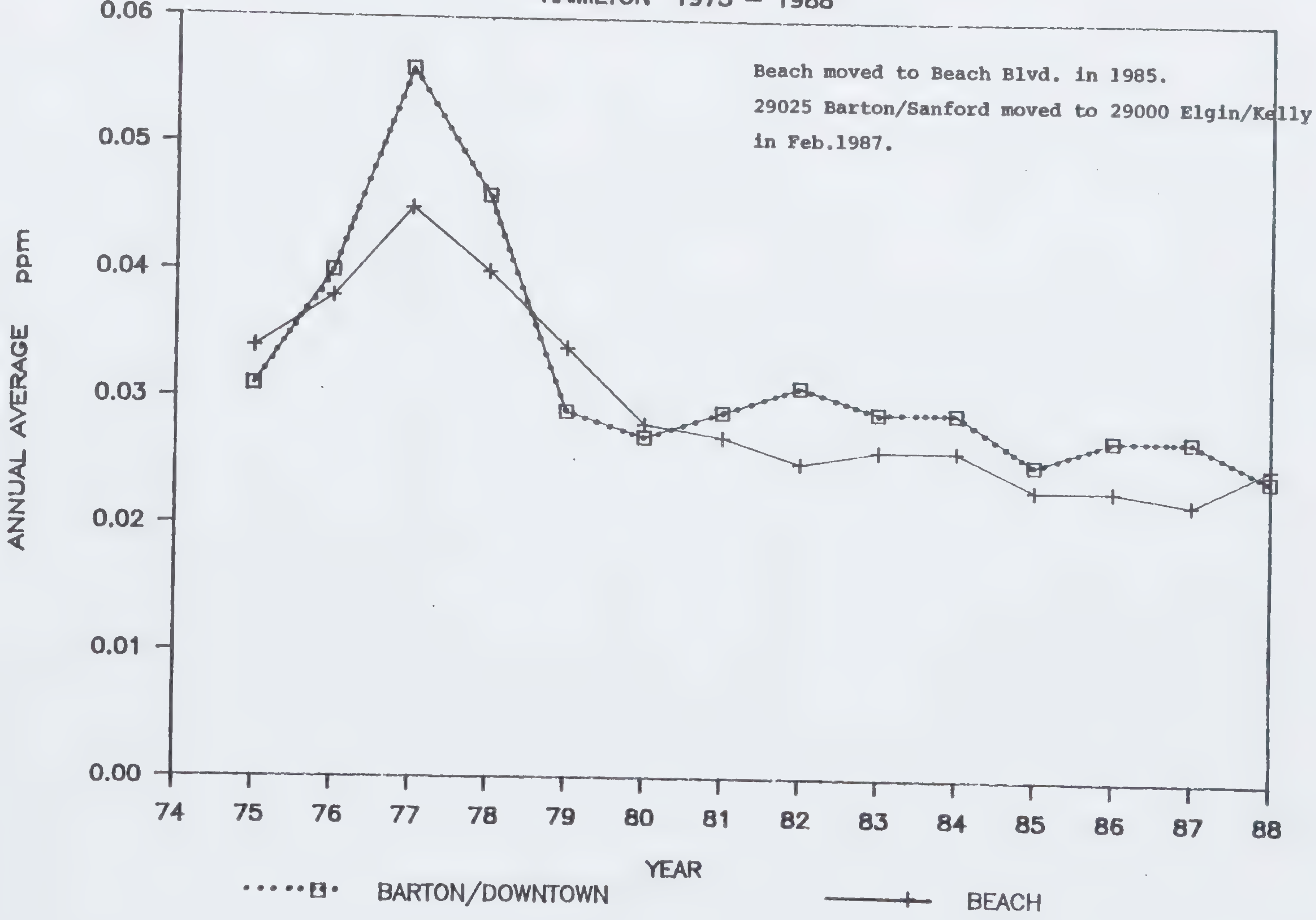
6 - Six months of sampling (July - December).

* - 29025 moved to 29000 in February 1987.

FIGURE 19

NITROGEN DIOXIDE YEARLY TREND

HAMILTON 1975 – 1988



Beach moved to Beach Blvd. in 1985.
29025 Barton/Sanford moved to 29000 Elgin/Kelly
in Feb.1987.

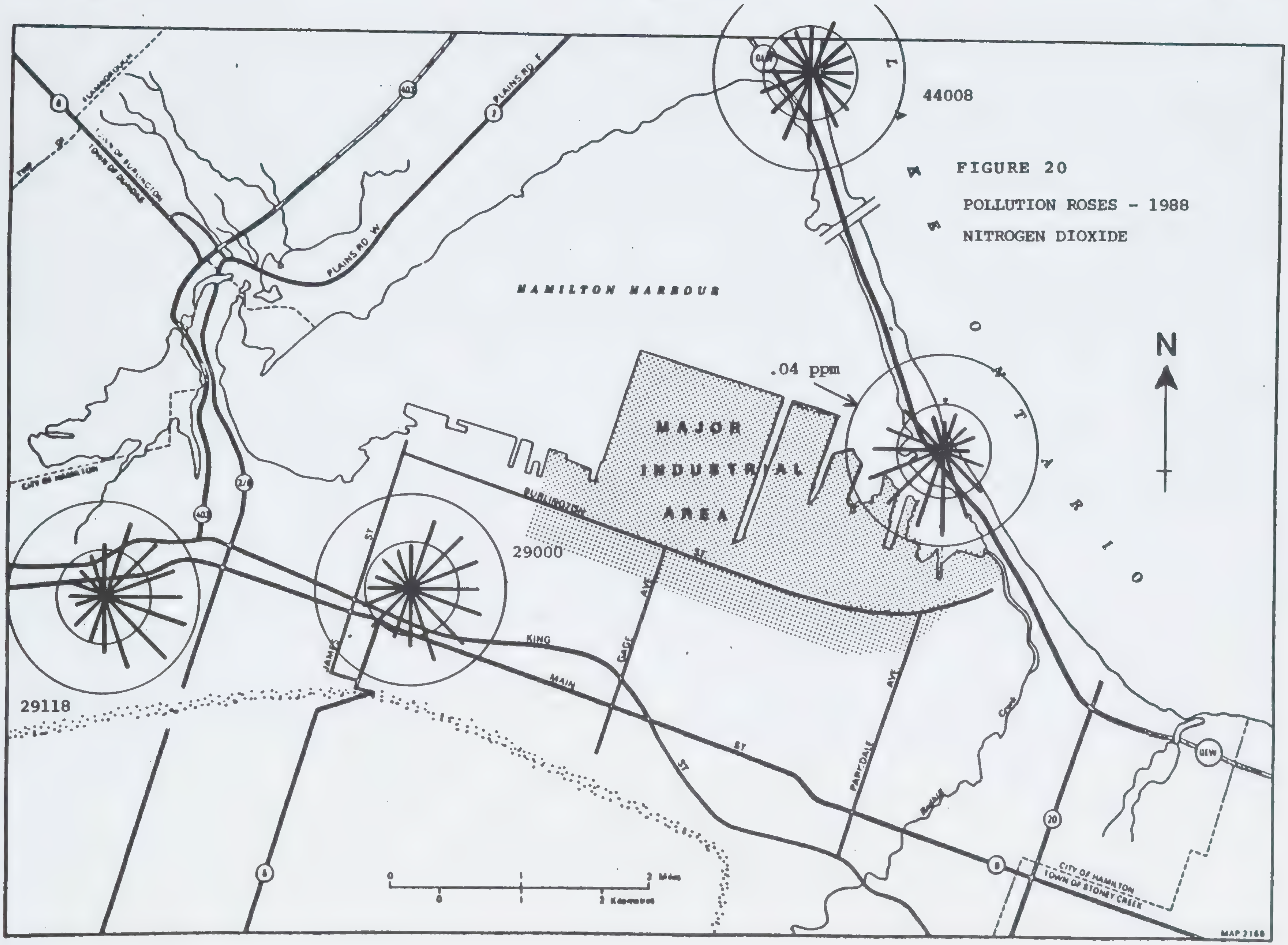


FIGURE 20

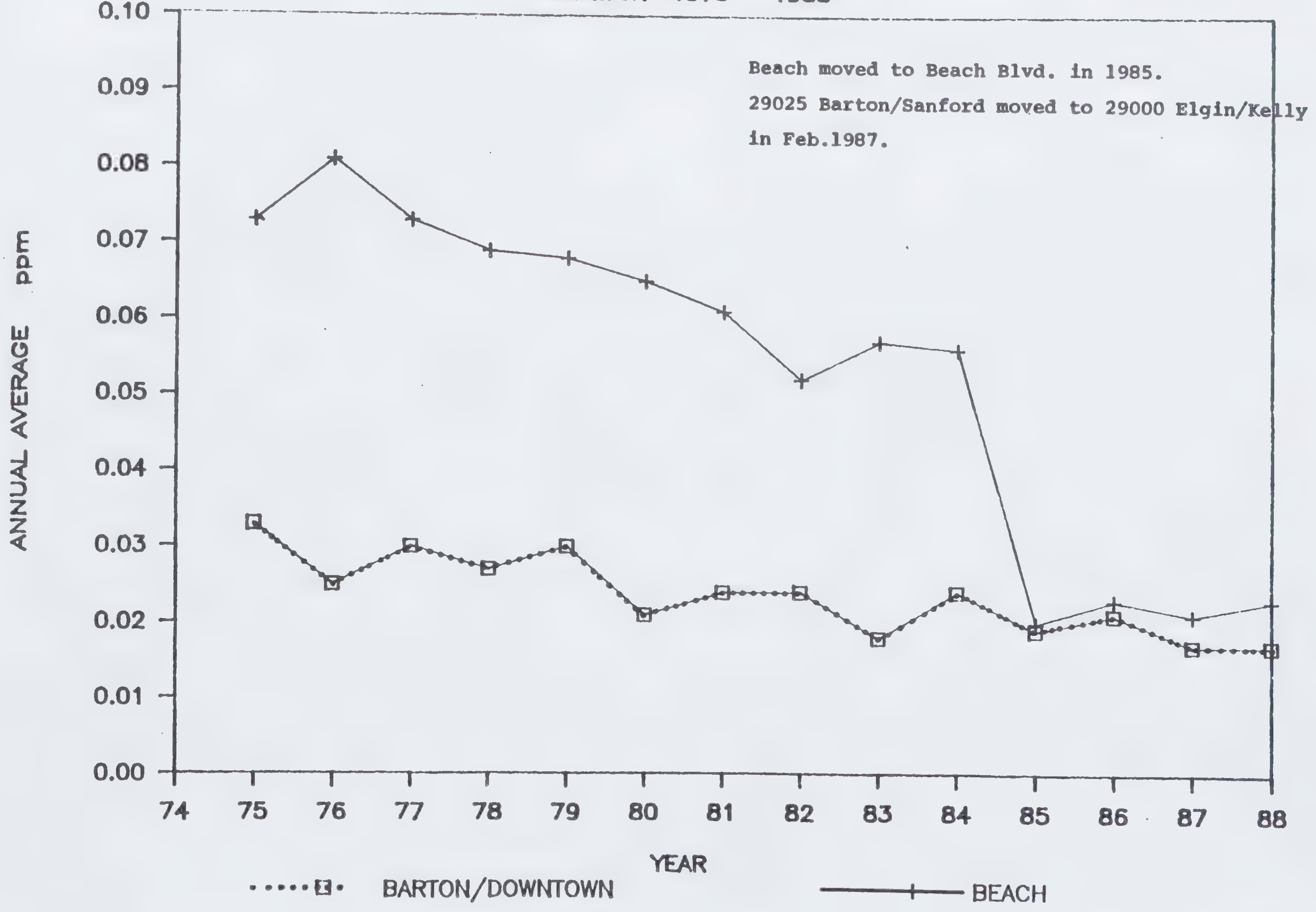
POLLUTION ROSES - 1988

NITROGEN DIOXIDE

FIGURE 21

NITRIC OXIDE YEARLY TREND

HAMILTON 1975 – 1988


Beach moved to Beach Blvd. in 1985.
29025 Barton/Sanford moved to 29000 Elgin/Kelly
in Feb.1987.

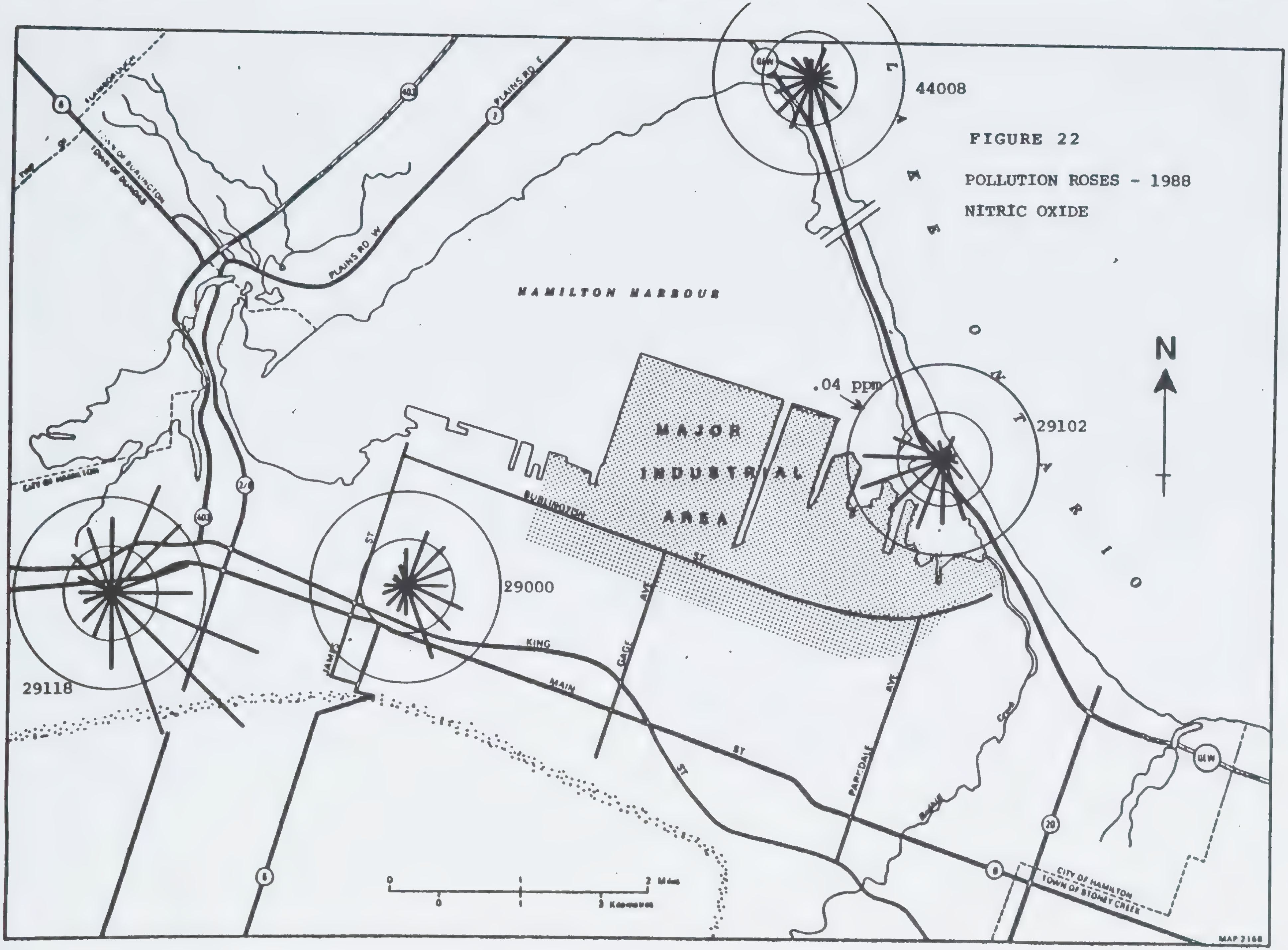


FIGURE 22

POLLUTION ROSES - 1988

NITRIC OXIDE

4.8 Ozone

Oxidants are produced by photochemical reactions involving oxides of nitrogen, hydrocarbons and sunlight. Ozone accounts for most of the oxidants produced. The sources of the precursor pollutants are mainly industrial and automotive. The rate of oxidant production is dependent on the quantity of precursor pollutants, temperature and intensity of sunlight.

Ozone is known to cause respiratory problems, and at very elevated concentrations, people can experience adverse health effects. Ozone is also injurious to different types of vegetation including certain tobacco, bean and tomato crops. The one-hour objective for ozone (80 ppb) is based on such vegetation effects.

Ozone concentrations follow very definite annual and daily trends. Highest levels occur during the summer (May - September), and the daily maxima usually occur during late afternoon. Both patterns are directly related to temperature and the amount and intensity of sunlight.

Ozone was measured at the Elgin/Kelly station, at the east site 29105 (Nash/Kentley), the west site 29118 (Main West), mountain station 29114 (Vickers/E 18th) and Burlington 44008 (North Shore Blvd.). Data is summarized in Table 11 while yearly trends at Elgin/Kelly are illustrated in Figure 23.

In 1988, due to an extremely hot summer, levels were much higher than previous years and fairly uniform City-wide. The hourly objective of 80 ppb was exceeded in a range from 108 to 196 hours at the four Hamilton stations. Most of these readings fell in the moderate range of the AQI but 5-10 hours fell in the poor range at all stations. Somewhat surprisingly, the Main West site recorded the most exceedences, despite the fact it is much more prone to ozone depletion by vehicle traffic exhaust. However, the station is located at an Ontario Hydro transformer facility and the nearby overhead high tension wires are suspected of producing ozone. Studies are being carried out on this phenomenon. The Burlington station showed another surprising result by recording only 37 hours over the hourly standard similar to previous years. All other stations in Southern Ontario showed extreme increases in 1988. Burlington's lack of the same trend is unexplained, except for the possibility that the Hamilton industrial zone which lies upwind on these occasions acted as a scavenger of ozone.

During each elevated ozone episode, winds were southwest and warm temperatures prevailed. The origin of the ozone is believed to be the United States. This is confirmed by stations close to the shore of Lake Erie. One such station at Long Point, upwind of all Canadian sources, measured over 560 hours above the objective, the most in the Province.

The pollution roses in Figure 24 confirm that highest concentrations occurred under winds from the southwest quadrant. The peaks from these directions are not overly prominent because southwest winds do not automatically yield high ozone levels even during the summer. Low temperatures, lack of precursor pollutants or absence of direct sunlight all reduce ozone formation.

Ozone, hydrocarbons and oxides of nitrogen can be transported over great distances and can be augmented by local sources. However, Hamilton and other major urban areas usually experience lower ozone concentrations than their more rural surroundings during peak occurrences due to the numerous high temperature combustion sources which produce scavengers of ozone such as nitric oxide. Nonetheless, ozone and other oxidants remain a problem in the Hamilton area. Due to the complexity of oxidant formation and the long range transport phenomenon, this problem will have to be resolved on a national and international rather than local scale.

TABLE 11

OZONE

UNITS - PARTS PER BILLION

Ontario Objective: 1-hour - 80

		Annual Average	Maximum - 1 hour	No. of Hours Above Objective
29025 - Barton/	1988	17.9	137	144
Sanford	1987*	15.2	105	24
29000 - Elgin/Kelly	1986	16.3	88	5
	1985	19.0	96	17
29105 - Nash/	1988	20.6	132	108
Kentley	1987	19.2	111	69
	1986	19.2	96	11
	1985	23.0^{11}	104	23
29114 - Vickers/	1988	19.8	131	156
East 18th	1987	19.8	114	85
	1986	20.1	94	34
29118 - Main W./	1988	18.3	135	196
Hwy. 403	1987	14.3	103	36
	1986	15.0	85	3
	1985	17.9^{6}	99	23
44008 - Hwy 2/N.Sh.	1988	18.2	151	37
Burlington	1987	19.7	167	41
	1986	19.8	99	46
	1985	20.8	115	19

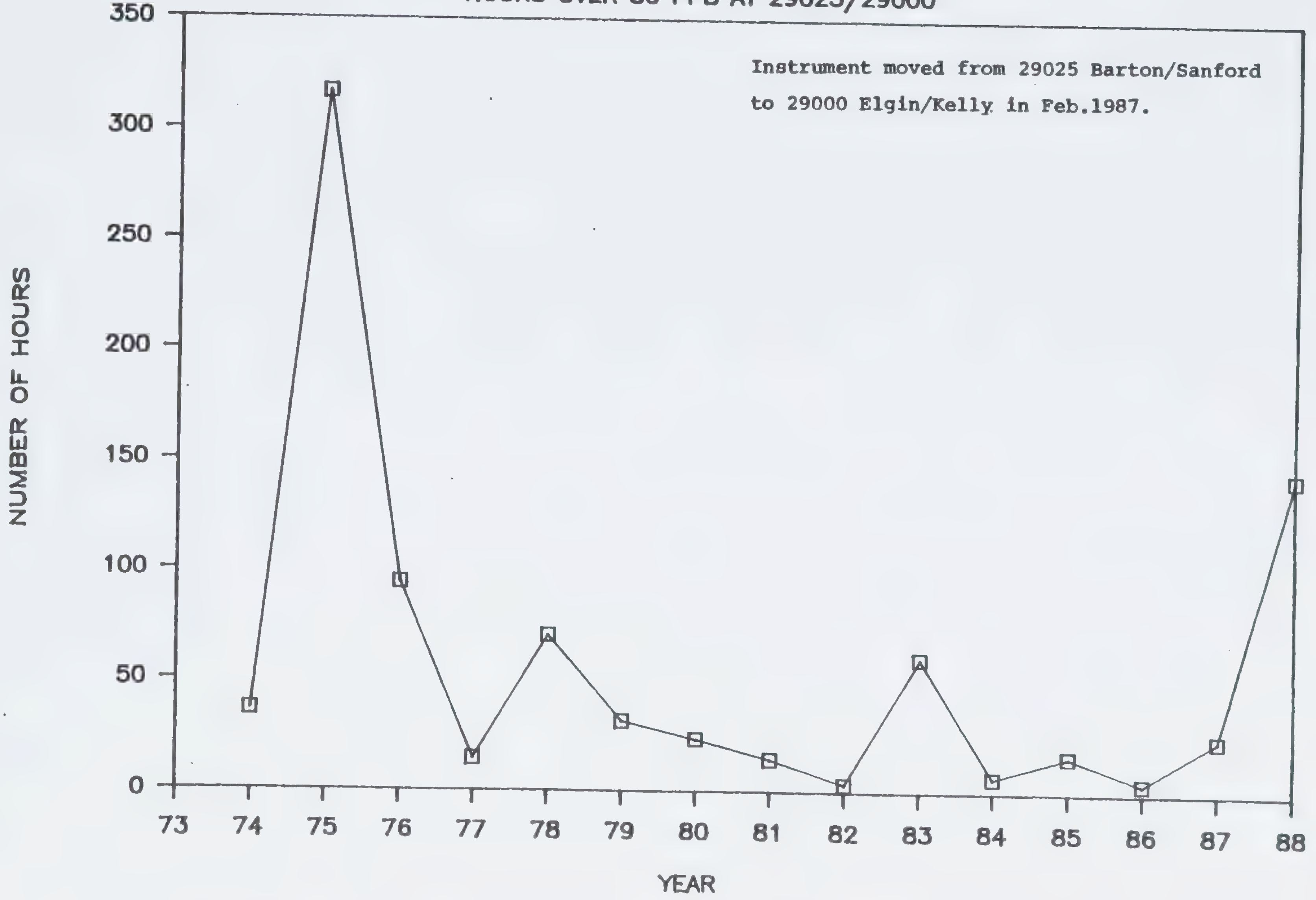
^{11} - Numeric exponent refers to number of months sampled when less than 12.

* - 29025 moved to 29000 in February 1987.

FIGURE 23

OZONE EXCEEDENCE TREND

HOURS OVER 80 PPB AT 29025/29000



Instrument moved from 29025 Barton/Sanford to 29000 Elgin/Kelly in Feb.1987.

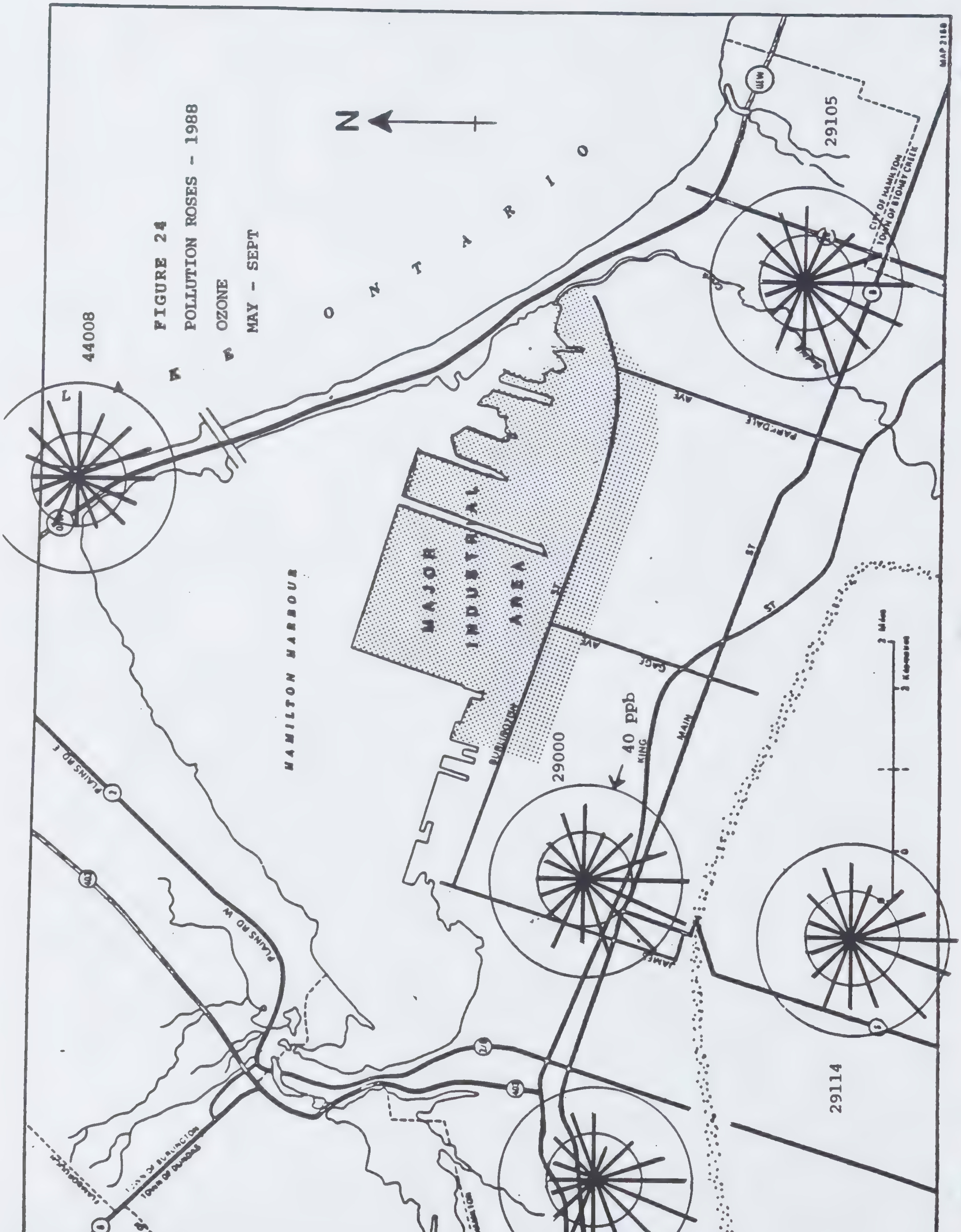


FIGURE 24
POLLUTION ROSES - 1988
OZONE
MAY - SEPT

4.9 Fluoridation

This measurement is a relatively crude assessment used to determine quantities of various fluoride compounds in the ambient air. A lime coated paper is exposed to the atmosphere for one month and is then chemically analyzed for fluoride. The fluoride objectives are based on vegetation damage and for this reason, the objective is more stringent during the growing season. For the period of April 15 to October 15, it is 40 micrograms/100 square centimeters/30 days while for the remainder of the year it is 80.

In Hamilton, the major fluoride sources are the basic oxygen furnaces used by the major steel industries which require fluorspar as a fluxing agent and a brick manufacturing plant at the base of the escarpment near Gage Park. In addition to these process emissions, there are other minor sources such as coal burning, since coal contains trace amounts of fluoride.

Data for 1988 are summarized in Table 12 and the yearly trend since 1970 is illustrated in Figure 25.

The trend graph shows that while levels were declining gradually during the 1980's following large reductions in concentrations which began in 1971, an upturn in concentrations was observed in both 1986 and 1987. In 1988, levels reduced once again.

A contour plot of yearly averages is given in Figure 26. A ring can be drawn around the industrial area as shown. The worst station within this area recorded 6 samples above the monthly objectives. However, past Phytotoxicology Assessment Surveys indicated that fluoride injury to silver maple foliage (a sensitive indicator species) in this area was only in very small amounts.

The most prominent individual source of airborne fluoride in the city is the Hamilton Brick Co., near Gage Park. A network of five monitors was established there in 1988 and recorded high levels well above objectives.

Elevated fluoride concentrations near brick plants are common. A 1983 report undertaken jointly by the Ontario Ministries of Environment, Health and Labour concluded that "the maximum additional intake of fluoride resulting from exposure to brick plant fluoride emissions is small. It is concluded that this additional intake could be considered to fall within the normal range of fluoride intake from dietary sources and as such would not be expected to induce health effects in an exposed population" (p. 24). This report was based on measurements near a Toronto and a Brampton brick plant. Concentrations in Toronto and Brampton were comparable to those measured at the Hamilton stations.

Although human health concerns are not a problem, light to moderate injury to sensitive vegetation (mostly silver maple) was discovered in the vicinity of the plant in 1986. Injury and fluoride concentrations in the vegetation decreased with distance from the brick plant. The maximum fluoride concentration measured in plant tissue in 1986 was 820 ug/g, well above the guideline of 35. In contrast, the maximum fluoride level measured in the industrial area was only 60 ug/g in the regular 1987 survey. A survey was not conducted in 1988.

The Hamilton Brick Co. has upgraded their drying ovens and reduced the temperatures used in the process in conjunction with the installation of more efficient kilns. These modifications should result in a reduction of fluoride levels surrounding the plant. The Ministry is continuing abatement activities with the company in an attempt to further reduce emissions to an acceptable level.

TABLE 12
FLUORIDATION RATE - 1988

ALL VALUES IN MICROGRAMS/100 SQ. CM/30 DAYS

Ontario Criteria - Apr. 15 to Oct. 15 - 40
Oct. 15 to Apr. 14 - 80

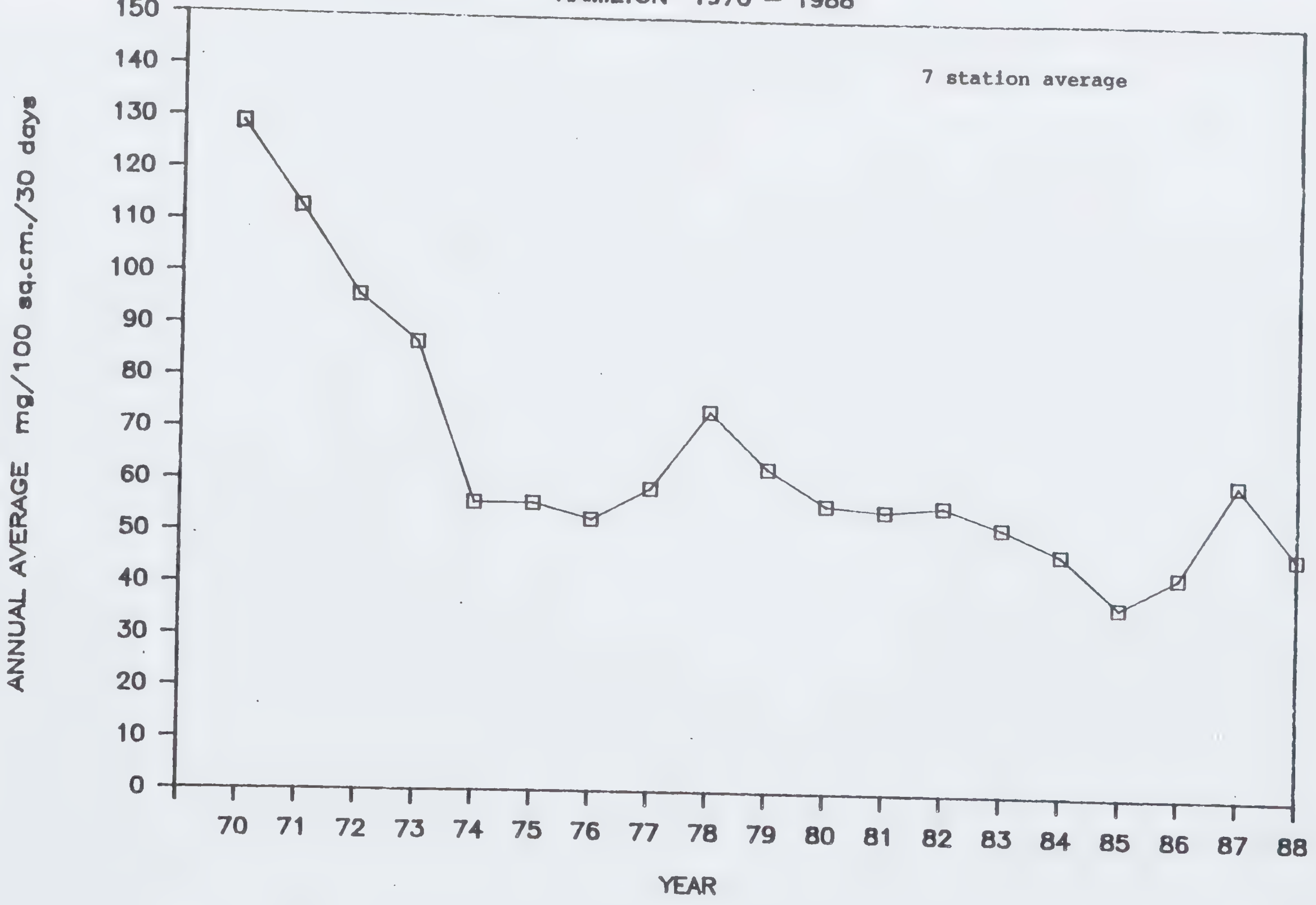
	Annual Average 1986	Annual Average 1987	Annual Average 1988	Maximum 1988	Number of Months Above Objective 1988
29001 Hughson/Hunter	28	38	30	42	1
29012 Burlington/Wellington	22	40	24	36	0
29025 Barton/Sanford	40	54	40	64	3
29054 Beach Rd./Conrad	44	79	53	81	5
29059 Burlington/Gage	59	89	63	79	6
29062 Briarwood School/ King St. E.	54	64	57	89	5
29066 Killarney/Beach Blvd.	54	64	59	89	5
29115 London/Justine	269^{11}	190^{4}	206^{9}	294	9
29116 Dalkeith/Ottawa	59^{11}	94	66	80	6
29119 Morley/Parkdale	45^{11}	52	42	53	3
29120 Dickson/Burlington	64^{11}	77	45	66	4
29126 Rosslyn/Montclair	-	-	167^{9}	332	7
29127 Lawrence/Balmoral	-	-	998^{9}	1675	7
29129 Province/Justine	-	-	103^{9}	191	9
29131 Central/Graham	-	-	84^{9}	109	8

^{11} - Numeric exponent refers to number of months sampled when less than 12.

FIGURE 25

FLUORIDATION RATE YEARLY TREND

HAMILTON 1970 – 1988



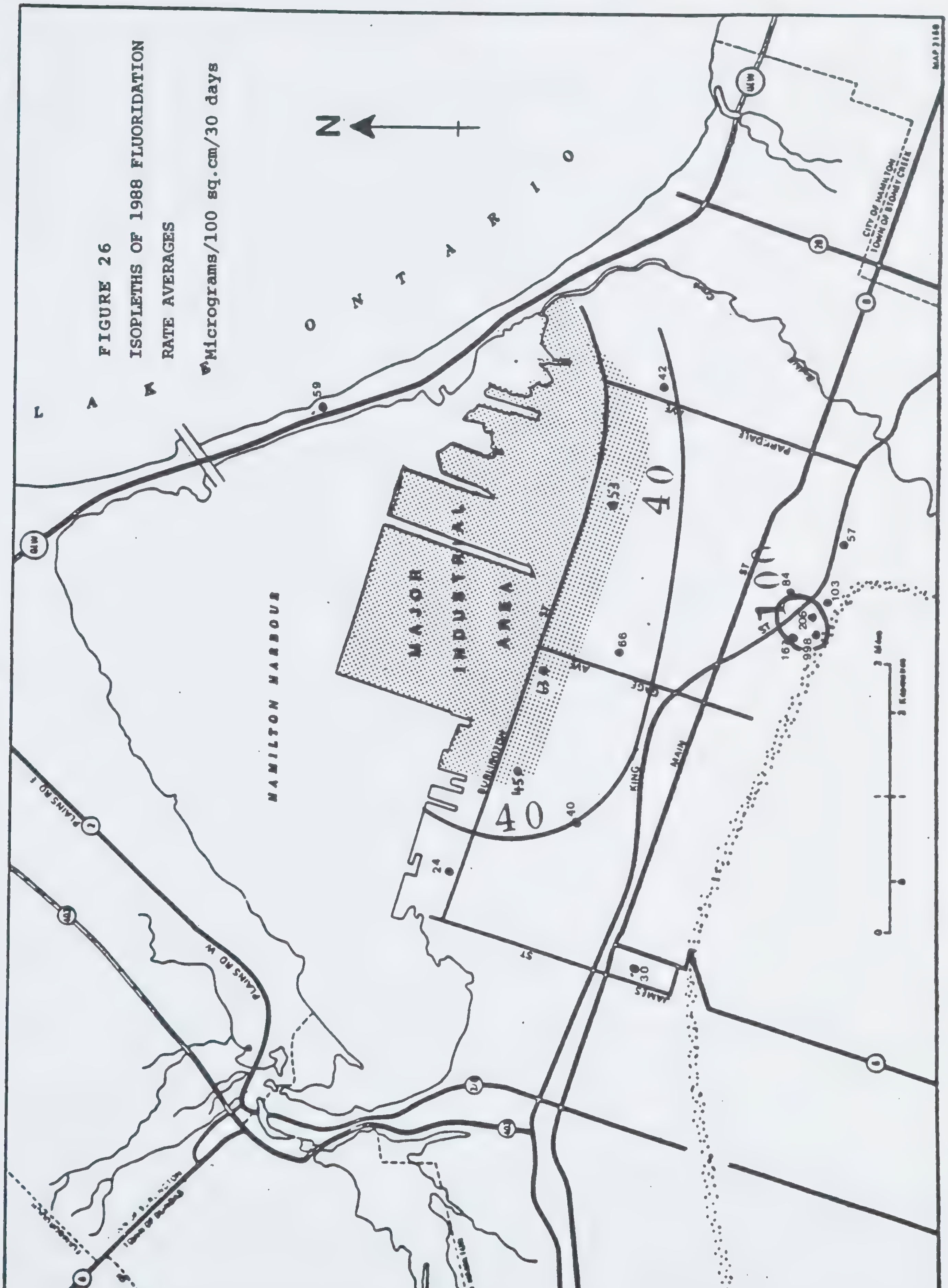


FIGURE 26
ISOPLETHS OF 1988 FLUORIDATION
RATE AVERAGES
*Micrograms/100 sq.cm/30 days

5. AIR MONITORING NEAR STEETLEY INDUSTRIES

In addition to the network in the City of Hamilton, the Ministry has been monitoring airborne dust levels near Steetley Industries, a limestone quarry operation near Greensville in the Town of Flamborough since 1974. Four dustfall jars have been in place continuously since that time. Two additional jars were added in 1982 when the quarry expanded, and another jar was added in 1988. In addition, beginning in 1986, hi-vol sampling for suspended particulates was undertaken at the Westfield Academy on Ofield Road South, just northeast of the company's processing plant at station 29111. A second hi-vol (29112), was installed in the village of Greensville in mid-1987. A map of the station locations is given in Figure 27.

The 1988 suspended particulate data at station 29111 - Westfield, indicated a sometimes severe localized problem with airborne dust. The annual geometric mean of 110 ug/m^3 was well above the yearly objective of 60 and 23 out of 56 samples exceeded the daily objective of 120. All data are summarized in Table 13.

The Westfield data were severely affected by construction activities. An addition was built onto the Academy starting in the summer of 1988 and this generated much fugitive dust. The TSP data were correlated against wind direction frequency and no direction dominated with a positive correlation, unlike 1987 data when southwest winds from Steetley did show a correlation. The construction activities thus clearly affected the samples making Steetley's contribution unclear.

Further away in the village of Greensville at station 29112, the levels were much lower. The geometric mean was well below the annual objective and only 2 samples out of 48 exceeded the daily objective. Only one of these two readings could be ascribed to Steetley. The other may have been related to winter road sanding operations. However, the samples were analyzed for carbonate (limestone is calcium carbonate) and these levels did correlate positively with northerly wind direction frequency, suggesting some effect of Steetley.

Dustfall levels (also Table 13) in 1988 improved from 1987 at 5 of 6 stations. Station 29073 at a restaurant on Highway 5 just northeast of the quarry continued to yield the highest concentrations, almost double the other stations, and eight samples exceeded the monthly objective. This restaurant's unpaved parking lot was suspected to be contributing to the readings. To ascertain this, a second jar (29273) was located close by in 1988, but removed from the parking lot near the corner of Ofield and Highway 5. As suspected, the readings at this location were much lower than the restaurant, with only one out of nine samples exceeding the objective. This one sample in July was heavily loaded and may have been caused by the construction activities at the Westfield Academy just south of the sampler.

Figure 28 gives the yearly trend of dustfall dating back to 1975 for the old four established locations. The restaurant station (29073) trend is given together with the combined average of the other three locations. The latter curve shows steady improvement since 1984 falling below the annual objective in 1988. The restaurant curve does likewise except for an upturn in 1987.

Quarry operations have moved north of the 4th Concession and this is reflected by station 29096 on Ofield Rd. N. Its yearly mean has been increasing since 1986 and measured six exceedences of the monthly objective in 1988.

In January 1987, Steetley installed a new electrostatic precipitator to control their #1 and #3 kilns. The emissions from these kilns were also directed into a single tall stack, eliminating a shorter stack and thus providing better dispersion of the remaining process emissions. In 1988, the company installed a conveyer system from the north quarry operations to the plant, eliminating truck traffic, a source of dust. A slurry system was also installed for disposal of precipitator dust by wet methods. Previously, this dust was trucked in dry form causing dust problems. As well, the company installed adjustable stackers reducing fugitive emissions from storage piles and in late 1989 the #3 feed stockpile will be enclosed. Steetley is also planning to install a new electrostatic precipitator, so that all three kilns will have their own separate precipitators. The dustfall data indicate these improvements are having a positive effect.

The remaining dust sources at Steetley's processing plant are the dry fines plant, and various fugitive dust sources such as stock piles, roads, portable crushers, and a large stone feed pile for the #3 kiln (to be housed in 1989). The latter pile is located only about 150 metres from the Westfield Academy hi-vol site.

TABLE 13

SUMMARY STATISTICS - GREENSVILLE

PARTICULATES NEAR STEETLEY QUARRY

SUSPENDED PARTICULATES - micrograms per cubic metre

ONT.OBJECTIVES: 120 (24 hour)
60 (annual geo.mean)

STATION	GEOMETRIC MEAN 1986	1987	1988	1988 MAXIMUM 24 HR	NO.OF SAMPLES	NO.TIMES OVER OBJECTIVE(1988) 24 HR	1 YR
29111 OFIELD S/HWY 5	100	89	110	1113	56	23	1
29112 HARVEST/WESITE	-	39	39	173	48	2	0

DUSTFALL - grams/square metre/30 days

ONT.OBJECTIVES : 7.0(1 MONTH)
4.5(ANNUAL AVERAGE)

STATION	ANNUAL AVERAGE 1986	1987	1988	1988 MAXIMUM 1 MONTH	NO.MONTHS OVER OBJECTIVE 1986	1987	1988
29073 - HWY 5/OFIELD	8.2	9.7	9.3	14.7	9	8	8
29273 - OFIELD/HWY 5	-	-	*6.1	29.7	-	-	1
29074 - OFIELD S	7.2	5.2	4.8	8.7	6	3	1
29075 - HARVEST RD	6.5	4.7	4.2	11.7	5	2	3
29076 - MELDRUM/WESITE	5.3	4.8	5.2	12.5	3	1	3
29096 - OFIELD N	4.8	5.2	6.6	11.1	0	3	5
29097 - 4TH CONCESSION	4.1	3.9	3.4	10.3	1	2	1

* 9 months of data

FIGURE 27
Map of Sampling Station Locations
Near Steetley Industries
Flamborough

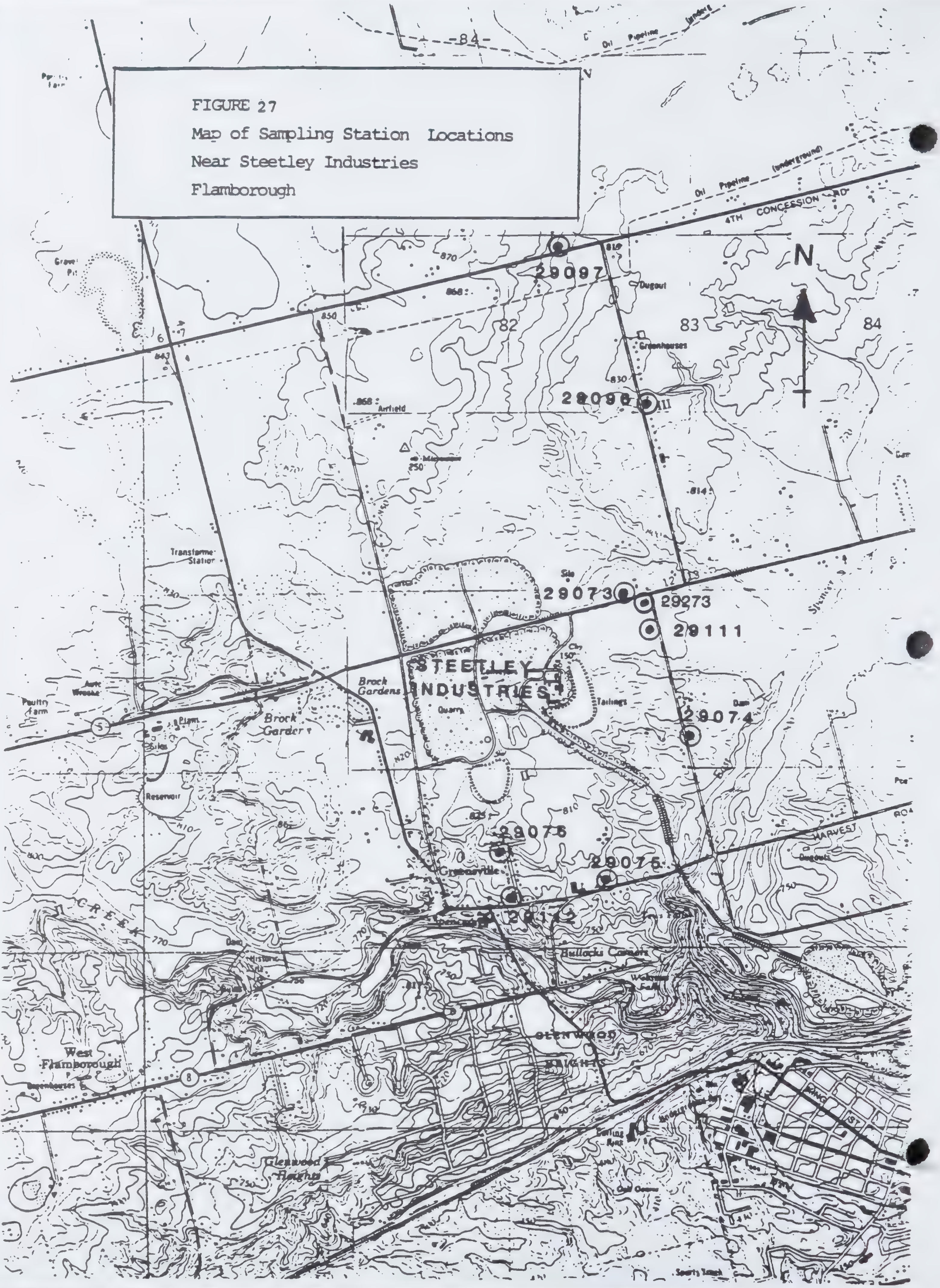
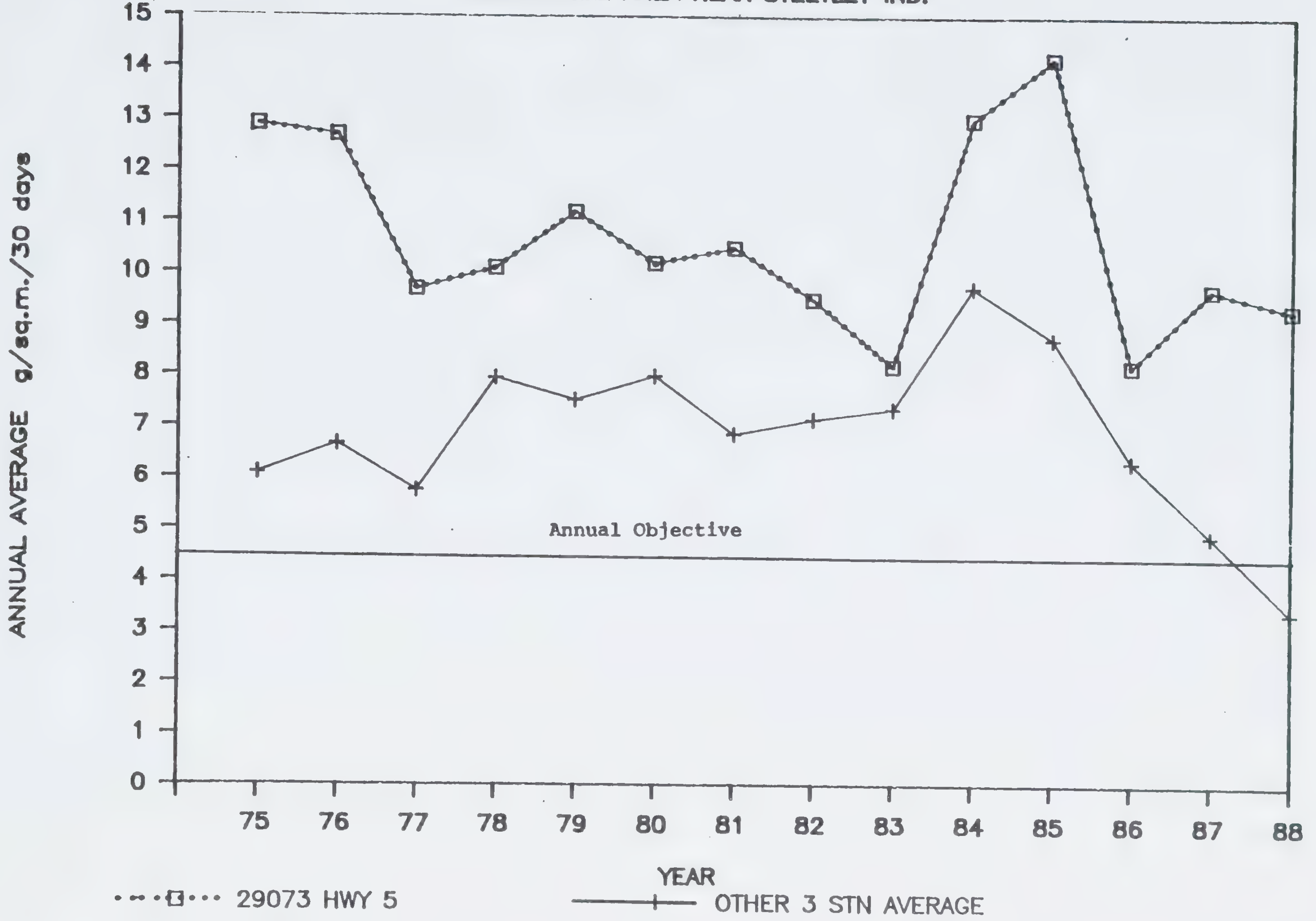


FIGURE 28

DUSTFALL YEARLY TREND

GREENSVILLE AREA NEAR STEETLEY IND.



6. DISCUSSION

There are two main air pollution problems in Hamilton, apart from occasional odours and dust fallout in the industrial area. One problem is short-term pollution build-ups during the spring and fall due to the presence of temperature inversions. The sources of this pollution are both vehicle traffic and industry.

The other problem is high ozone levels in summer, due to long range transport of pollutants. Ozone levels were much higher in 1988 than in previous years, due to increased temperatures.

During 1988, suspended particulate levels remained unchanged at most monitoring stations. The Air Pollution Index (API) reached the advisory level of 32 on one occasion during inversion conditions. The city's unique topography makes it very susceptible to inversions during which times pollution build-ups are unavoidable, and therefore, such incidents will recur in the future.

Dustfall levels throughout the city significantly decreased at most locations in 1987 and again in 1988 following little change in levels since 1970. No single initiative can be ascribed to this improvement. However, efforts by industry to control point sources and fugitive sources by such techniques as the use of chemical sealants, road paving, road washing and landscaping, together with improved street cleaning practices by the City may help to explain the trend. Further efforts must be made wherever possible. These can be both industrial and non-industrial in nature, such as controlling blowoff from unpaved areas, excavation, construction, demolition, road traffic and stock piles and related materials handling. Further controls on industrial point sources will also continue where necessary.

The Hamilton air monitoring network has been expanded in recent years because of the introduction of the new Air Quality Index (AQI) in June, 1988.

A new telemetry system allows for immediate access to data, both in Toronto and in the Hamilton office and permits remote control and maintenance of instruments, all resulting in a more efficient monitoring program.

The new AQI is a function of six different pollutants, which form up to eight separate subindices. The highest hourly subindex becomes the AQI. Concentrations of sulphur dioxide, soiling index, carbon monoxide, nitrogen dioxide, total reduced sulphur and ozone are all individually converted to the old scale of index numbers (although not all AQI stations measure all six pollutants and all eight subindices). The advisory or alert levels remain the same as previously 32, 50, 75 and 100. The old API has been retained as one subindex and will continue to be used for industrial action requests should the API reach or exceed 32.

In Hamilton, four separate AQIs are being reported for the east, west, mountain and the new downtown station at Elgin/Kelly. The need for more than one index station in Hamilton has been apparent for some time as air quality can vary widely throughout the city at any given time.

The intent of the new index is to better inform the community about day to day air quality.

7. References

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2. U.S. Environmental Protection Agency. Office of Research and Development, December 1977. "Research Highlights 1977". Report No. 600/9-77-044. Washington, D.C.

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4. City of Hamilton, Department of Traffic, "Average Weekday Traffic Totals - 24 Hour Volume Overlay - 1981".

5. Ontario Ministry of Labour, Fall 1983 Report. "Assessment of Fluoride Exposure in Populations Residing Close to Fluoride Emitting Brick Plants".

6. Ontario Ministry of the Environment, June 1987. "Evaluation of a New Filter Medium for High Volume Sampling". Report ISBN 0-7729-2639-5.

3a

1991

October 1, 1990

CONFERENCE NOTICE

ZEBRA MUSSELS - MITIGATION OPTIONS FOR INDUSTRIES

SPONSORED BY ONTARIO HYDRO AT THE ROYAL YORK HOTEL, 100 FRONT STREET WEST, TORONTO, ONTARIO, M5J 1E3

THIS TWO-DAY CONFERENCE WILL HIGHLIGHT RECENT RESEARCH AND DEVELOPMENT OF TECHNIQUES AND SYSTEMS DESIGNED TO ASSIST INDUSTRIAL WATER USERS IN COPING WITH THE RECENT INVASION OF ZEBRA MUSSELS.

SPEAKERS WILL SUMMARIZE RECENT RESEARCH RESULTS, INDUSTRIAL WATER USERS WILL PRESENT CASE STUDIES AND VENDORS WILL EXHIBIT PRODUCTS AIMED AT MONITORING AND MITIGATION.

AGENDA:	FEB 11	AM:	MITIGATION STRATEGIES - CASE STUDIES
		PM:	REGULATION & EFFECTIVENESS OF CHEMICAL OPTIONS VENDOR EXHIBIT
	FEB 12	AM:	NON-CHEMICAL MITIGATION
		PM:	PANEL DISCUSSION

CONFERENCE ORGANIZER :	PAUL M. WIANCKO	(416-592-4599)
PROGRAM COORDINATOR:	RENATA CLAUDI	(416-592-9140)

COST (CANADIAN FUNDS)

REGISTRATION BEFORE DECEMBER 15	- $275.00
LATE REGISTRATION	- $325.00
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3b)

REGION OF HAMILTON-WENTWORTH

- INFORMATION -

DATE: September 28, 1990
E300-01 J. Halliday

REPORT TO: Mr. Chairman and Members
Chairmans Advisory Group on Environmental Affairs

FROM: E. M. Gill, P.Eng.
Acting Commissioner of Engineering

SUBJECT:

Potential for the Use of Regional Laboratory GC/MS for analysis of trace organics in the potable water supply

Ted Gill

E. M. GILL, P. ENG.
ACTING COMMISSIONER OF ENGINEERING

FINANCIAL/STAFFING/LEGAL IMPLICATIONS:

N/A

BACKGROUND:

Monies were budgeted in the Industrial Waste operating budget in 1989 to purchase a Gas Chromatography/Mass Spectrometry (GC/MS) equipment to enable trace organic analyses to be carried out as part of the MISA Program for the preparation of Industriaq
l Waste and Sewage Treatment Plan affluent guidelines.

Cont'd ...

Potential for the Use of Regional Laboratory GC/MS for analysis of trace organics in the potable water supply

Cont'd ...

In the fall of 1989 Council approved expenditure of the money for this piece of equipment. Mr. Spencer, then Commissioner of Engineering, was asked if the piece of equipment could analyse for P.C.B's, dioxins and pesticides in the Region's potable water supply.

Mr. Spencer stated that the equipment could analyse for these specific compounds; however, the equipment had been purchased for the Industrial Waste Section's obligations and requirements under MISA.

With respect to the monitoring of drinking water quality in the Region, since 1987 the Regional Municipality of Hamilton-Wentworth has been involved with the Ministry of the Environment in the Drinking Water Surveillance Program.

This project involves monthly sampling and analysis of raw water, treated water, and water from the outer extremities of the distribution system. The analysis includes over 120 trace organics as well as conventional standard analysis for water quality.

As the Drinking Water Surveillance Program has not indicated any parameters of concern which would be analysed on the GC/MS, it is not the intent of the laboratory to utilize this piece of equipment for potable water analysis as long as the Drinking Water Surveillance Program is in effect.

Once the MISA Program has been established, the instrument will be evaluated to assess whether or not its sensitivity has been effected enough to make it suitable for potable water analysis, as it is a well accepted fact that once a GC/MS has been used for relatively high concentrated samples on a regular basis that its sensitivity for lower concentrations is adversely effected.

JH:ccc

cc: R. Whynott, Regional Chairman
cc: M. Carson, C.A.O.

3c)

B2 THE SPECTATOR, SATURDAY, OCTOBER 13, 1990

Man from Glad has yet to recycle his 'recyclable' bag: spokesman

By BETH MARLIN
The Spectator

THE MAN from Glad says Dundas residents prefer blue bags over blue boxes for their recyclables.

At least they did when they thought the plastic bags handed out to 209 participants in a pilot study were being recycled along with their contents.

Although Third Sector — the agency that runs the blue box program in Hamilton-Wentworth — has returned the blue bags to Glad's marketer, First Brands (Canada) Corp., none of them have actually been re-processed.

In fact, since the company began distributing "recyclable" bags to several Canadian municipalities in 1988, First Brands has not yet recycled a single blue bag into a marketed product, said advertising director Richard Carmichael.

Although the company may eventually re-use the plastic to manufacture handles for windshield snow scrappers, it hasn't yet developed an efficient way to first clean the used bags, said Mr. Carmichael, who is also First Brands' director of environmental affairs.

The company's study — which concluded residents put out more recyclables more often when using bags instead of the boxes — was carried out earlier this year in a 420-home Dundas subdivision with the co-operation of Third Sector and the Town of Dundas.

The bags were distributed to about half the residents, who were told to use separate bags for newspapers and other recyclable waste. The remainder of the residents continued to use their blue boxes.

> *"It is a little shocking. If they're going to call them recyclable, they should be able to take them back."*
>
> **– Anthony Taylor**

"We were told (the bags) would be recycled," said Anthony Taylor, general superintendant for the Town of Dundas. "It is a little shocking. If they're going to call them recyclable, they should be able to take them back."

Several residents who participated in the study said they had also been given the impression the bags they used would be recycled into saleable products.

"They're not being recycled? I'm surprised by that," said Ken Ridge, who lives on Grant Boulevard.

However, the 79-year-old said he found the bags easier to get to the curb than the blue box. "I'm older and it's more comfortable for me."

Even if the bags were being reprocessed, recycling more plastic isn't the answer, says Paul Muldoon of Pollution Probe.

Mr. Muldoon, who also sits on the region's advisory committee on environmental issues, said people should instead cut back on the amount of waste — recyclable or otherwise — they produce.

According to the study, the bags were quicker and 25 per cent cheaper to collect.

They were also found to be more convenient and sanitary for users and were not subject to damage or loss as are blue boxes, it concluded.

"Of course they said that. They're obviously trying to promote the use of blue bags," said Val Terluk, the region's solid waste manager.

However, Mr. Terluk said the region's recycling program hasn't ruled out the possible use of a recyclable plastic or canvas bag, particularly for apartment and office buildings.

Much will depend upon the willingness of the company that is eventually awarded the region's next recycling contract to accept the bags, he said.

FIRST
BRANDS
(CANADA)
CORPORATION

305 MILNER AVENUE
SCARBOROUGH, CANADA, M1B 3V4
FAX: (416) 299-7421
TEL: (416) 299-7500

October 16, 1990

Mr. Val Terluk
Manager, Solid Waste Operations
Department of Engineering
Regional Municipality of Hamilton-Wentworth
71 Main Street West
Hamilton, Ontario
L8N 1T4

Dear Mr. Terluk,

This letter is to clarify some confusion that may have been caused by the article on the Dundas Blue•Bag pilot test that appeared in Saturday's Hamilton Spectator.

As we have stated all along, First Brands is committed to ensuring that all Blue•Bag collected from the Dundas Pilot Test are recycled into new or existing products.

During the Dundas Pilot test, the 209 Blue•Bag households set out an average of one bag per week. As each Blue•Bag contains only 29 grams of plastic film, we require large quantities of bags before we have sufficient weight to move to the recycling stage. Therefore, it has taken many months to generate the required number of bags -- over 5000 -- from the Dundas test.

Our intention with this pilot test has always been to generate enough bags from Dundas to recycle them together at one time, so that we could accurately report back to Town ot Dundas officials and residents the final "end use" of their Blue•Bags. Now that we have acquired enough bags from Dundas to facilitate the recycling and manufacturing process, we can fulfill our commitment to close the "recycling loop.".

In all Blue•Bag pilot tests, we have kept the bags from each community in separate "lots." This practice has helped us to evaluate whether the quality of post-consumer plastic film in the Blue•Bags differs in various programs. In Winnipeg, where the program has progressed past the pilot stage and 25,000 households use Blue•Bags, we were able to generate the quantities of plastic required for a production run much sooner. The handle in the enclosed ice-scraper contains Blue•Bags from Winnipeg.

At no point did we ever imply to the Spectator that Dundas residents "prefer" bags over boxes for recycling. However, you were correct in stating that we are promoting the use of Blue•bags. We will continue to promote the option of bag-based recycling systems to municipalities across Canada, and we stand by the success experienced by a number of Canadian municipalities who have implemented bag-based programs over the past two years.

If you have any questions about our Blue•Bag recycling process, please feel free to contact Bill Conning, Richard Carmichael or myself at any time at (416) 299-7500.

Regards,

B Jackman

Boris Jackman
Vice-President, Home Products
First Brands (Canada) Corporation

RECYCLED PAPER

Report on Curbside Recycling using the GLAD Blue•Bag System

Executive Summary

Introduction

Between February and June 1990, MacLaren Engineers Inc. conducted an evaluation of the GLAD Blue•Bag system, developed by First Brands (Canada) Corporation, for comparison with the Blue Box method. The studies considered the collection of commingled recyclable materials with the two different systems. The studies were conducted at the Pilot Program Site in Dundas, Ontario, in cooperation with Third Sector Employment Enterprises, the recycling program operator for the Regional Municipality of Hamilton-Wentworth.

Based on the data gained from the studies conducted for this report, we have concluded that the GLAD Blue•Bag system is more efficient than the blue box for collection of commingled recyclable materials.

There is a notion held by some people that the blue box program can not be improved upon. First Brands (Canada) Corporation has taken a responsible and methodological approach to developing what has proven to be an innovative and much improved method for collection of recyclable materials in a quality curbside recycling program.

The data gathered from this study has now been compiled and evaluated. The following is an executive summary of our investigations and conclusions on this matter.

Overview of GLAD Blue•Bag program

After careful consideration of various recycling collection methods, First Brands concluded that a system based on the use of recyclable, plastic bags is better suited to the household collection of commingled, recyclable materials. It was felt that this approach offers numerous advantages over other existing systems to the residents participating in the program, the program operators and to municipalities. Some of these advantages include:

- Convenience (bags are easily accommodated inside the home)

- Sanitation (bags can be opened and closed as required and are leak resistant)

- Handling Convenience (especially important for seniors and the handicapped, bags are easy to carry and require only one trip to the curb)

- Variable volume capacity

- Bags are not subject to loss or damage problems sometimes associated with blue boxes.

First Brands established a pilot program to test their recycling system in a number of Canadian cities, including Dundas, Ontario. In these programs, residents collect recyclables in their home using GLAD Blue•Bags, and then place the bags at curbside on recycling day for pick up. The bags are made of 100 per cent recyclable plastic. The Blue•Bags are see-through to allow collectors to easily identify the contents as recyclable, and are also tinted blue to allow privacy to householders. Similar to most waste collection programs, residents purchase their own bags through normal retail outlets, thus relieving the municipality of the initial capital cost, ongoing administration and replacement costs that box based programs have.

In the Dundas pilot program, residents use a GLAD Blue•Bag for commingled collection of recycled materials and have the option of setting out old newspapers (ONP) tied in bundles, in a plastic grocery bag or in another GLAD Blue•Bag.

Dundas Pilot Test

Through the co-operation of the Town of Dundas and Third Sector Recycling, First Brands arranged to conduct a Pilot Study Program of the GLAD Blue•Bag system in a "typical" low density residential subdivision. The subdivision has approximately 420 single family homes in it and was divided into two groups, with 209 homes in the "Test Cell" (GLAD Blue•Bag) and 211 homes in the "Control Cell" (blue box).

The entire study area was monitored by another independent company for thirteen weeks before the pilot program began to ensure that the households in each of the two cells were relatively equal with respect to recycling and waste disposal practices.

In the study, MacLaren Engineers focused on the three main areas of concern:

1. Time:Motion (T:M) studies of curbside collection in the Test and Control areas.

2. Analysis of the quantity of each type of material collected from the Test and Control areas.

3. Analysis of the glass collected from each area to determine the amount of breakage encountered during collection.

Results from Pilot Test

Time:Motion Results

Time measurements in these surveys were based on the total elapsed time spent on curbside collections in a specific area, beginning at the first pick-up and ending with the last. The data indicates that:

- Residential participation (set-out) rates were consistently higher in the Test (Blue•Bag) area than in the Control (blue box) area.
- The same crew (that had just performed the blue box collection) was able to complete the GLAD Blue•Bag route in less time even though the collection vehicle was required to make more stops in the test area.

Data collected from this study indicate that the GLAD Blue•Bag outperformed the blue box for commingled collections:

- 18% more residences passed per minute
- 46% more residences collected per minute
- 31% more weight (kg) collected per minute
- 24% further distance travelled per minute

Calculation for Recycling Collection Costs:

Based on the data collected we have concluded that the costs for the GLAD Blue•Bag method are:

- 24% less (than the blue box) per 100 kilograms of recyclables collected
- 16% less (than the blue box) per 100 households passed by.

This difference represents a major cost savings to recycling program operators, especially for programs in larger municipalities.

Quantities of ONP and Commingled Containers

The data collected indicates that for every 100 households served the GLAD Blue•bag system has recovered more recyclable materials than the blue box:

- 18.5% more ONP (old newsprint)
- 23.2% more metals
- 1.8% more PET plastic
- 10.5% more glass

These statistics indicate that a well designed bag based recycling system is capable of recovering more materials from the household waste stream than a blue box system can.

Recovery of Glass

During this project, our study team also compared the two systems for glass breakage resulting from collection procedures. Our studies concluded the average loss of glass for each method to be:

- 16.6 % GLAD Blue•Bag
- 22.7 % blue box

We attribute the reduction in glass breakage from the GLAD Blue•Bag to the "cushioning" effect that the bags (all containing commingled materials) have on the glass during route collections.

Summary Conclusions

The recycling "industry" is relatively new and related technology is constantly developing and improving. This is to be expected and should, in fact, be encouraged in order that the most effective solutions be found. The result will be conservation of human and material resources, as well as financial resources.

Based on the data gained from the studies conducted for this report, we have arrived at the following conclusion:

The GLAD Blue•Bag System is More Efficient than the Blue Box for Collection of Commingled Recyclable Materials.

In this study we have been able to compare the performance of the GLAD Blue•Bag system with a well established blue box program. Our evaluations have shown that the GLAD Blue•Bag has outperformed the blue box in every category studied and listed below:

- More weight collected per 100 households passed by (higher "capture" rate in the home);
- Higher participation (set-out) rates for households on the program;
- More efficient use of resources;
- Higher collection efficiency and lower costs (less time required for equipment and personnel to complete route collections);
- Reduced glass breakage during route collection and higher recovery rates of glass for sale to markets (when compared to commingled blue box).

We attribute the higher "capture" rate to the fact that the GLAD Blue•Bag system is better suited to everyday use in the home. The majority of materials (other than newspapers) set aside for disposal through curbside recycling programs originate in the kitchen. The GLAD Blue•Bag is much more easily accommodated in most kitchens because of its size and shape. In addition, the bags are more sanitary than the blue box because they are virtually leak proof and can be opened and closed many times. This helps to reduce offensive odours and any messes caused by leaking residue.

It is likely that the higher participation (set-out) rates for the GLAD Blue•Bag result from at least three main factors:

- The increased volume of materials collected in the home serves to encourage the householder to set the bags out for collection more often;
- The householder does not have to retrieve or clean out the GLAD Blue•Bags;
- The GLAD Blue•Bags can be set out on "bad weather" days because the materials they contain are protected from the elements, whereas the blue box is open to rain, wind and snow, etc.

We have observed that collection efficiency for the GLAD Blue•Bag is higher than the blue box for the following reasons:

- The bag only required one trip to the curb for collection whereas the box has to be returned empty to the spot it was picked from. The safety of the collection staff is also improved because there is no second trip to the curb (through traffic lanes) to return a recycling container;
- Commingled materials and ONP (old newspapers) are placed in separate bags and are easily divided. Materials set out in the blue boxes often have to be sorted from each other before the box can be dumped (eg. people often place ONP in the bottom of the box and loose containers on top);
- ONP placed at the curb in bags remains dry even in inclement weather whereas ONP in blue boxes is exposed to the elements and gets wet. Collecting ONP in bags is also a benefit after it is picked up and placed in an uncovered truck as paper is kept dry and is easier for the program operator to handle;
- Bags are easily tossed over the side of the truck body as it fills up but the blue box has to be lifted much higher and held as it is dumped. This should result in fewer job related injuries (eg. back strain) than the blue box. It also gets more difficult to empty the boxes as the cargo body fills up because there is less space to dump into;
- The blue box has limited capacity. Householders often fill them to overflowing and recyclables are blown out by the wind. The collection staff then has to pick up loose items from the ground and make two trips to the truck because of spillage. With the GLAD Blue•Bag system, the householder just fills a second bag and then ties them shut so that nothing can fall out. This can become more important as recycling programs expand to take in more materials;
- Bags are easier for children, seniors, etc. to carry than the blue box.

The GLAD Blue•Bag system not only affords better efficiency of human and material resources, it also has several other positive effects on the collection procedures. For example:

- Routes are covered in less time therefore less fuel is consumed and the demand on a non-renewable resource is reduced;
- Lower fuel consumption and less truck idle time results in reduced emissions of hydrocarbons and nitrogen oxides into the atmosphere;

- Shorter time on collection routes in neighbourhoods reduces traffic congestion.

In our studies we observed that recovery of glass with the GLAD Blue•bag was superior to the blue box method.

- The reduction of glass breakage results from the fact that bags full of recyclable materials tend to cushion the impact of glass with other materials during collection and unloading procedures;
- On average, almost 78% of all glass collected by the GLAD Blue•Bag was largely intact and about 7% was in pieces large enough to be recovered and colour sorted. This makes sorting and processing much more efficient.

Recommendations

Through our work on this project we have concluded that the GLAD Blue•Bag system is well suited to curbside recycling and that it can actually improve convenience and performance over existing blue box programs.

The GLAD Blue•Bags used in these programs cost approximately $2.00 for a package of 10 (about $0.20 each). We have found that most people with the GLAD Blue•Bag system will use less than one bag per week. At this rate, we estimate that the average household will use about 30 - 40 bags a year (cost = $6.00 - $8.00), if they set out every other week. This is very reasonable, especially it they take into consideration the added conveniences over the blue box. Also, since the plastic bags are 100% recyclable, the demand on non-renewable resources are not unduly stressed by this use of one-trip bags.

For households already using bags for refuse, the use of GLAD Blue•Bags for recyclables should not result in an increase of total bag purchases over the year.

We recommend that First Brands (Canada) Corporation continue its efforts in the development of the GLAD Blue•Bag recycling system. The company should also continue to work with any municipalities that are interested in using this method by providing technical expertise and advice in areas where they may need assistance.

3d)

THE SPECTATOR

nvironment A special report

Friday, October 19, 1990

REGIONAL MUNICIPALITY OF HAMILTON-WENTWORTH

DON'T WAIT TO GET TO THE CURB BEFORE YOU START THINKING ABOUT WASTE REDUCTION

Participation in the Blue Box Program is part of the garbage solution. Consumption habits that reduce the waste we generate are equally important, because the best way to put out less garbage is to avoid bringing it home in the first place.

Waste Conscious Shopping Is An Easy Habit To Acquire:

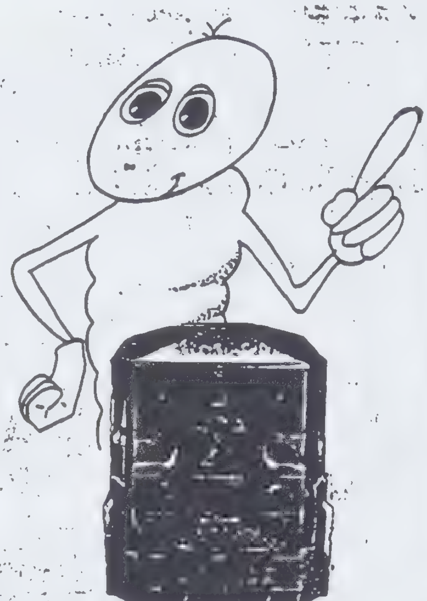
- Buy Durable Goods
- Opt for minimal packaging, or none at all. Whenever possible Buy Bulk!)
- Leave Disposables Behind
- If container packaging is unavoidable, select refillables. At the very least, choose recyclables over non-recyclables.

Need to know more about waste reduction? Call

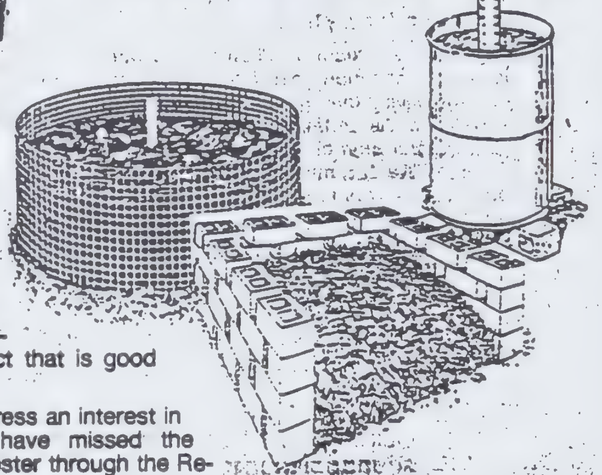
The Regional Municipality of Hamilton-Wentworth

Regional Municipality of Hamilton-Wentworth
Department of Engineering
Solid Waste Section
546-4417

REGIONAL MUNICIPALITY OF HAMILTON-WENTWORTH



HERE'S THE REAL DIRT ABOUT BACKYARD COMPOSTING



In 1990, The Region of Hamilton-Wentworth assisted residents with the purchase of backyard composting units. Over 16,000 households ordered composters through the program.

Composting is a natural and inexpensive way to reduce curbside waste, and the process yields a finished product that is good for your garden.

Many people continue to express an interest in backyard composting, but have missed the deadline for ordering a composter through the Region's program. Units can be purchased from various retail outlets or can be built with little expense and relative ease.

For those interested, a guide with additional information about composting, including building instructions is available from:

The Regional Municipality of Hamilton-Wentworth

Regional Municipality of Hamilton-Wentworth
Department of Engineering
Solid Waste Section
546-4417

COMPOSTING: Good For Your Garden-Good For Your Community

REGIONAL MUNICIPALITY OF HAMILTON-WENTWORTH

EXTRA! EXTRA!

REGIONAL RESIDENTS SAVE 43,000 CUBIC METRES OF LANDFILL SPACE

If you picture this blue box as being 35 metres long, 35 metres wide, and 35 metres high, then you can picture the amount of space saved by Hamilton-Wentworth residents through participation in the blue box program. By the end of 1990, approximately 19000 tonnes of newspaper, food and beverage cans, glass bottles and jars, and plastic pop bottles, will have been recycled in Hamilton-Wentworth.

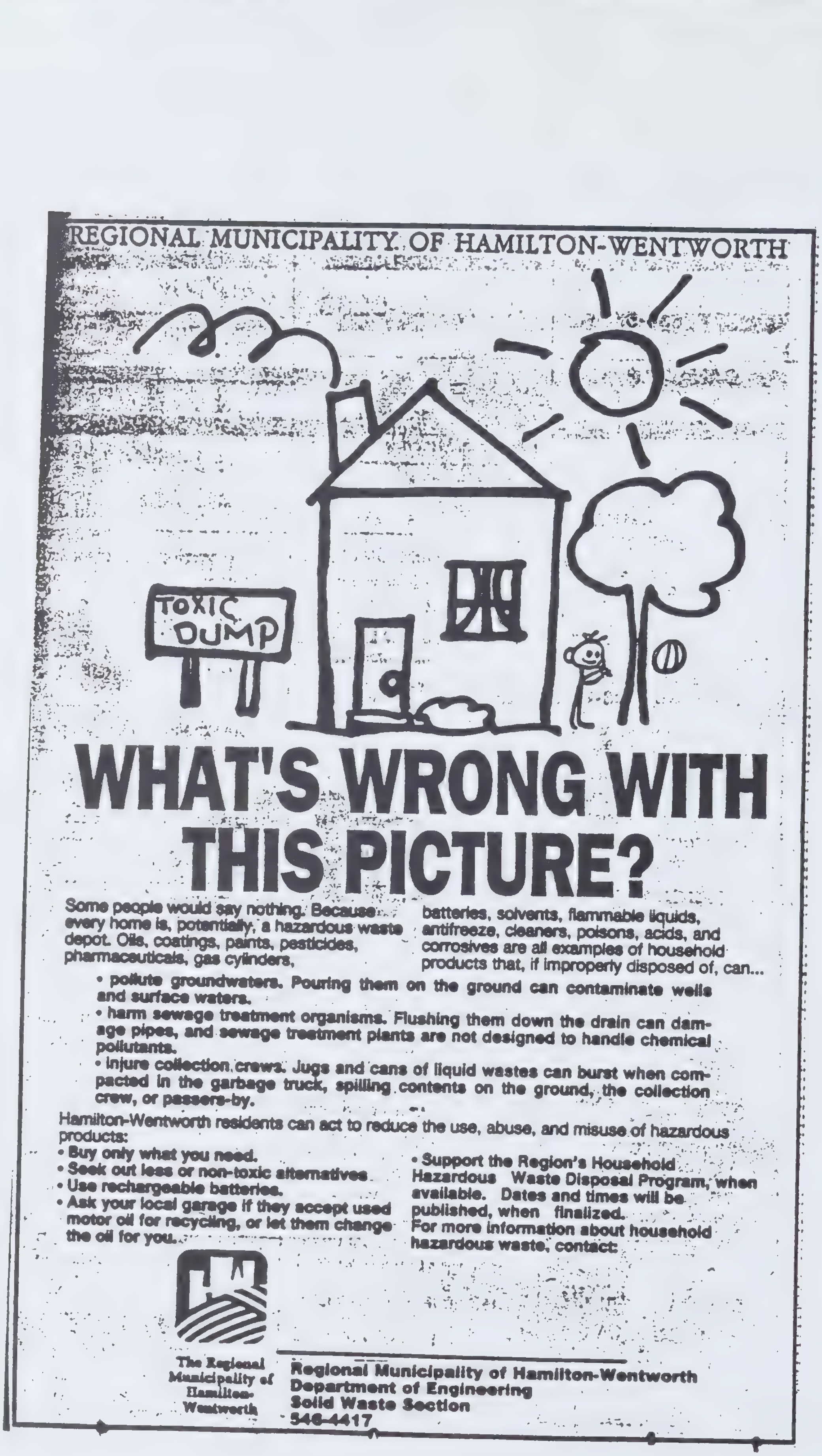
Landfill space won't be the only savings. About 267,000 trees will be spared from becoming newsprint, and about 2,730 tonnes of iron ore will be conserved. Reduced energy consumption in the steel making process, equivalent to about 6550 barrels of oil, is also a by product of our collective participation.

The Region of Hamilton-Wentworth is currently reviewing plans to expand the program, including the addition of new materials to recycle.

More benefits, increased conservation, decreased landfilling. Stay tuned! In the meantime, for more information about our Blue Box Program, contact:

The Regional Municipality of Hamilton-Wentworth

Regional Municipality of Hamilton-Wentworth
Department of Engineering
Solid Waste Operations
546-4417



REGIONAL MUNICIPALITY OF HAMILTON-WENTWORTH

WHAT'S WRONG WITH THIS PICTURE?

Some people would say nothing. Because every home is, potentially, a hazardous waste depot. Oils, coatings, paints, pesticides, pharmaceuticals, gas cylinders, batteries, solvents, flammable liquids, antifreeze, cleaners, poisons, acids, and corrosives are all examples of household products that, if improperly disposed of, can...

- **pollute groundwaters. Pouring them on the ground can contaminate wells and surface waters.**
- **harm sewage treatment organisms. Flushing them down the drain can damage pipes, and sewage treatment plants are not designed to handle chemical pollutants.**
- **injure collection crews. Jugs and cans of liquid wastes can burst when compacted in the garbage truck, spilling contents on the ground, the collection crew, or passers-by.**

Hamilton-Wentworth residents can act to reduce the use, abuse, and misuse of hazardous products:

- **Buy only what you need.**
- **Seek out less or non-toxic alternatives**
- **Use rechargeable batteries.**
- **Ask your local garage if they accept used motor oil for recycling, or let them change the oil for you.**
- **Support the Region's Household Hazardous Waste Disposal Program, when available. Dates and times will be published, when finalized.**

For more information about household hazardous waste, contact:

The Regional
Municipality of
Hamilton-
Wentworth

Regional Municipality of Hamilton-Wentworth
Department of Engineering
Solid Waste Section
546-4417

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DEC. 13/90

CHAIRMAN'S ADVISORY COMMITTEE ON ENVIRONMENTAL ISSUES

AGENDA

DATE: Thursday, December 13, 1990

TIME: 8:30 o'clock a.m.

PLACE: Committee Room, 15th Floor
Regional Offices

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1. GENERAL

a) **Declaration of Interest** re: Municipal Conflict of Interest Act
b) **Minutes of Chairman's Advisory Committee on Environmental Issues Committee Meeting - November 8, 1990**

2. DELEGATION

2.1 Jillian Daffern from ECO LOGIC TECH. INC. to address committee members.

2.2 Dr. B. Gibson, Health Department, to discuss the City of Toronto's CFC By-law. (Verbal Report)

2.3 B. McHattie to discuss the "Hamilton-Wentworth Natural Areas Inventory Project" (verbal report)

3. BUSINESS ITEMS

3.1 **Draft of the City of Toronto's Water Conservation By-law**

For the consideration of the committee.

3.2 **Chlorofluorocarbons and Halon Task Force Report, City of Winnipeg, July 1989**

For the consideration of the committee.

4. **FOR THE INFORMATION OF THE COMMITTEE**

a) Correspondence from W. M. Carson; C.A.O. regarding "Administrative Support for Chairman's Advisory Committee on Environmental Issues"

b) Correspondence from Mr. P. J. Earl, Director of Communications and Public Affairs, Dofasco Inc., regarding a video on steel can recycling and related materials

c) Correspondence from the Corporation of the Township of Glanbrook regarding Suggestions to Council on Recycling

d) Correspondence from Ontario Hydro concerning the Lakeview Thermal Generating Station (Coal Ash Management Study - Public Information Centres) Council referral of Nov. 20, 1990, Communication #3

e) Resolution from the Regional Municipality of Durham - "General Welfare Assistance Costs" - Council referral of Nov. 20, 1990, Communication #3

f) Correspondence from the Banff Centre for Management - Seminar on Fostering Sustainable Economic Development through Community Leadership - January 27 to February 1, 1991

g) Newspaper article from Bill Pedder - "Ecological Catastrophe Ahead - Soviet Official"

h) Newspaper article from Bill Pedder - "Nuclear Waste to be stored deep in Canadian Shield"

i) State of the Environment Report 1990, and Summary Report

4. OUTSTANDING BUSINESS

Date	Subject	Referred to:
June 14, 1990	Energy Conservation Lights - Office Tower **Item 2.3 i)**	Sub-Committee on Energy
June 14, 1990	Steetley Landfill Site **Item 2.3 ii)**	Sub-Committee on Water Quality
June 14, 1990	Resolution - County of Wellington, re: Use of Tire Derived Fuel **Item 2.6**	Sub-Committee on Air Pollution
August 9, 1990	Spraying of Pesticides **Item 2.1**	Sub-Committee on Natural Areas
August 9, 1990	Joint Staff Committee on Initiatives **Item 3.1**	Committee to compose letter Secretary to Administrate
August 9, 1990	Bike Paths CP Railway Property	Committee to compose letter Secretary to Administrate
August 9, 1990	Hospital Incinerators and Biomedical Wastes MOE Staff to be invited to discuss	Committee to compose letter
September 13, 1990	Correspondence - Amstel Brewery - Recyclable Beer Bottles	Paul Muldoon

Date	**Subject**	**Referred to:**
October 12, 1990	Proposed Composter To Be Built In The Town Of Dundas	Tabled
October 12, 1990	Correspondence from Dr. Gibson re: Legislation to Control or Reduce Chlorofluorocarbons	Tabled
November 8, 1990	Correspondence from City of Toronto's Implementation and Enforcement of Chlorofluorocarbons By-law No. 30-89	Referred to Health Dep't. and Solicitor's Dep't.
November 8, 1990	1988 Hamilton-Wentworth Air-Quality Report prepared by Environment Ontario	Referred to Air-Quality Sub-Committee

5. ADJOURNMENT

1b)

MINUTES OF THE CHAIRMAN'S ADVISORY COMMITTEE ON ENVIRONMENTAL ISSUES

The Chairman's Advisory Committee on Environmental Issues met at 8:30 a.m. on Thursday, November 8, 1990 in the Committee Room, 15th Floor, Ellen Fairclough Building, Hamilton.

Present:	Chairman (Councillor) J. Prentice Councillors G. Copps, Wm. Pedder, R. Baetz, B. Thompson, B. Vanderbrug, G. Birchall, P. Muldoon, K. Murphy, C. Katz Regional Chairman R. J. Whynott
Absent with Regrets:	Councillor H. Merling - Vacation Councillor B. Hinkley - City Business B. McHattie
Also Present:	V. Terluk, J. Halliday, R. Duncan (HSR), R. Stewart (MOE), K. Pidsadny

1. GENERAL

a) **Declaration of Interest** re: Municipal Conflict of Interest Act (None)

b) **Minutes of Chairman's Advisory Committee on Environmental Issues Committee Meeting - October 12, 1990**
(Copps/Thompson) be received and adopted as presented.

CARRIED

2. BUSINESS ITEMS

Item 2.2 was brought forward.

2.2 Chlorofluorocarbons

Roy Duncan, Transportation Dep't., H.S.R., discussed chlorofluorocarbons with the committee.

(Vanderbrug/Pedder)
That in light of a growing concern of CFC's (Chlorofluorocarbons), it is recommended that the Transportation Services Committee enact the following:

a) That the installation of Air Conditioning Units on City buses be deferred until;

   i) acceptable alternatives are available and/or

   ii) safety controls re: leakage, are in place.

b) That the Hamilton Street Railway be encouraged to investigate acceptable alternatives and that the HSR be encouraged to couple their final decision with an educational campaign.

CARRIED

2.1 **1988 Hamilton-Wentworth Air Quality Report** (Prepared by Environment Ontario)

(Muldoon/Baetz)
That this be referred to the Air Quality Sub-Committee and it be brought back to the Chairman's Advisory Committee on Environmental Issues for consideration.
CARRIED

3. **NEW BUSINESS #1**

Correspondence from the City of Toronto re: Implementation and Enforcement of the CFC By-Law No. 30-89, City of Toronto

(Muldoon/Murphy)
That this item be **referred** to the Health Department and Legal Services Department for comment on enforcing a similar by-law for the Region of Hamilton-Wentworth.
CARRIED

NEW BUSINESS #3

(Muldoon/Birchall)
That the Engineering Services Committee request the Hamilton Conservation Authority to examine and declare the 20 acres of land, known as Jo Jo Lake, adjacent to the proposed Dundas Composter, as a natural area.

No Attachment
CARRIED

NEW BUSINESS #4

Val Terluk advised members of the public meetings scheduled for the proposed Dundas Composter on November 29, 1990, at 7:30 p.m. in the Dundas Town Hall. There are two other meetings tentatively scheduled for December 6 and 8, 1990 - location to be determined.

Regional Chairman R. J. Whynott advised members of his meeting with the Federal Government on Friday, November 2, 1990, on the possible establishment of a research centre in Hamilton-Wentworth, dealing with Environmental Technology and Pollution Prevention. Terms of Reference for these centres are yet to be established.

4. FOR THE INFORMATION OF THE COMMITTEE

(Muldoon/Birchall)
That the following items be received:

a) Zebra Mussels - Mitigation Options for Industries, Conference in Toronto - Royal York Hotel, Feb. 11 & 12/91

b) Potential for the Use of Regional Laboratory GC/MS for analysis of trace organics in the potable water supply

c) Newspaper article - October 13, 1990, "Man from Glad has yet to recycle his ‘recyclable’ bag: spokesman

d) Newspaper articles - October 19, 1990, "Environment - A Special Report"

e) Correspondence from The Pollution Probe Foundation, Oct. 18, 1990, re: Steetley application to recontour its landfill site at the Brown Landfill Site on the Niagara Escarpment near Dundas, Ontario **(New Business #2)**

CARRIED

5. **ADJOURNMENT**

On motion **(Vanderbrug/Muldoon)** the meeting adjourned at 10:40 a.m.

CARRIED

Chairman

Secretary

2.1

ECO LOGIC

PROPOSAL

LAB-SCALE DEMONSTRATION OF CONTAMINATED HARBOUR SEDIMENT TREATMENT PROCESS

September 21, 1990

by

ELI Eco Technologies Inc.
143 Dennis Street
Rockwood, Ontario
NOB 2KO

(519) 856-9591
(416) 450-7691

FAX (519) 856-9235

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2.0 BACKGROUND

There is a growing sense of awareness and concern about the state of our environment, and the lack of appropriate ways of dealing with some of the problems we have created. Eco Logic was formed in 1986 specifically to address the need for a clean-up tool for one of the most difficult problems, that of severely contaminated aqueous wastes such as harbour sediments, landfill leachate, and lagoon sludges. The criteria that Eco Logic has used in developing the process includes:

* destruction efficiency
* possibility of dioxin or furan formation
* continuous monitoring and process control suitability
* suitability for aqueous wastes
* mobility
* cost

The patented Eco Logic process addresses all of these criteria. It is based on the gas-phase thermo-chemical reaction of hydrogen with organic and chlorinated organic compounds at elevated temperatures. At 850°C or higher, hydrogen reacts with organic compounds in a process known as reduction to produce smaller, lighter hydrocarbons. In the case of chlorinated organic compounds, such as polychlorinated biphenyls (PCBs), the products of the reaction include hydrogen chloride, methane and ethylene. This reaction is enhanced by the presence of water, which can also act as a reducing agent. Bench-scale testing with trichlorobenzene (half of a PCB molecule) has shown that the reduction reaction will achieve 99.9999% destruction efficiency or better.

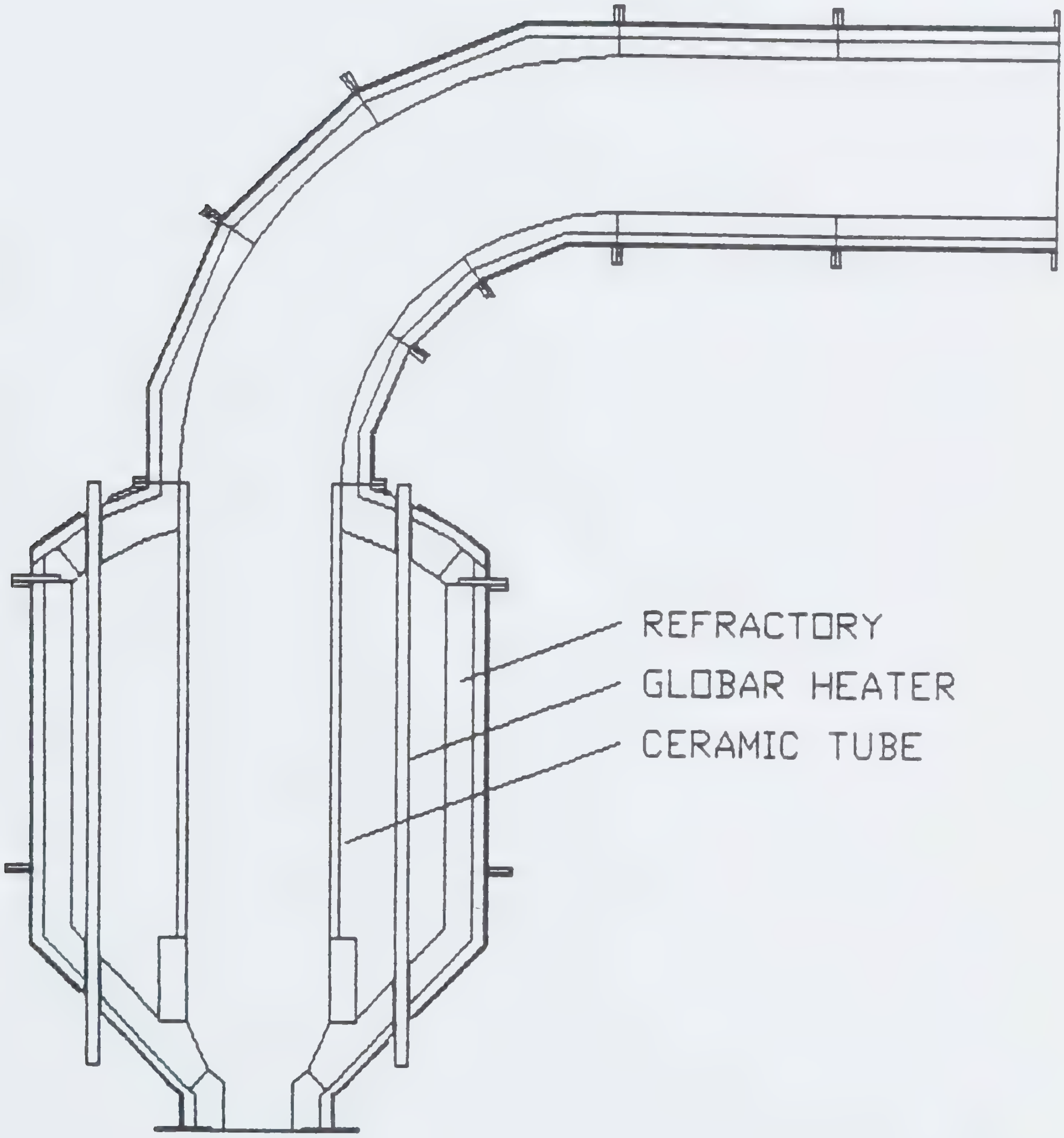
The Eco Logic process is not an incineration technology. Incineration processes destroy chlorinated organic wastes by breaking contaminant molecules apart with high temperatures and then combining them with oxygen, usually from air. A PCB waste would first fragment to form chlorobenzenes, which when combined with oxygen can form dioxins and furans, which are more toxic than the original PCBs. The Eco Logic process uses hydrogen to produce a reducing atmosphere devoid of free oxygen, and thus eliminates the possibility of dioxin or furan formation.

Other non-chlorinated hazardous organic contaminants, such as polycyclic aromatic hydrocarbons (PAHs), are also reduced to smaller, lighter hydrocarbons, primarily methane and ethylene. Because of the tendency of the reaction to produce lighter, more volatile gases, the process lends itself to continuous monitoring of the destruction efficiency. Eco Logic has purchased a very sophisticated on-line mass spectrometer system which is capable of measuring many organic chemicals on a continuous basis. Although PCBs can be measured directly, they are not very volatile and take longer to pass through a sampling system than other lighter compounds such as chlorobenzenes. Since chlorobenzenes are the initial breakdown products of incomplete PCB destruction, the efficiency of PCB destruction can be measured very quickly by continuously monitoring chlorobenzene concentrations. The information from the mass spectrometer can be tied in with the process controller so that an increase in chlorobenzene concentration (signalling a decrease in PCB destruction efficiency) halts the input of waste and alerts the operator. For PAH destruction, benzene concentrations can be monitored in the same fashion.

Figure 1 shows a schematic of the reactor designed to accommodate the thermo-chemical reduction reaction. A mixture of preheated waste and hydrogen is injected through nozzles mounted tangentially near the top of the reactor. The mixture swirls around a central ceramic tube past glo-bar heaters and is heated to 850°C by the time it passes through the ports at the bottom of the ceramic tube. Particulate matter up to 5 mm diameter not entrained in the gas stream will impact the hot ceramic walls of the reactor, thereby volatilizing any organic matter associated with the particulate. That particulate will exit out of the reactor

FIGURE 1

THERMO-CHEMICAL REDUCTION REACTOR



bottom to a quench tank, while finer particulate entrained in the gas stream will flow up the ceramic tube into the exit elbow and through the retention zone. The reduction reaction takes place from the bottom of the ceramic tube onwards, and takes less than one second to come to completion.

Figure 2 shows a complete process schematic of the field demonstration unit now under construction. Waste liquid and suspended solids (W) are pumped from a small storage tank to a heat exchanger vessel for preheating to 150°C by a small boiler (B). Steam from the watery waste and hot liquid are metered continuously to the reactor and injected along with hydrogen (H2) through atomizing nozzles. Recirculation gases (R) also enter the reactor near the top after passing through steam-heated and gas-fired heat exchangers. Heavy particulate exits as grit (G) out the bottom and fine particulate and gases pass up the ceramic tube where the gas-phase reduction reaction takes place. Additional residence time is provided by the retention zone elbow and extension pipe prior to the scrubber. Once the gases enter the scrubber, they are quenched by direct injection of scrubber water spray. Hydrogen chloride is removed by contact with the scrubber water as the gases pass through the scrubber media, which is carbon steel on the down leg and polypropylene on the up leg of the scrubber. Scrubber water is collected in a scrubber tank through a large water-sealed vent that also acts as an emergency pressure relief duct. The scrubber water is cooled to 35°C or cooler using a heat exchanger fed by cooling water from an evaporative cooler (E). Sludge (S) and decant water (D) are the two effluent streams from the scrubber and both are held in tanks for batch analysis prior to disposal.

The gases that exit the scrubber consist only of excess hydrogen, reduction products such as methane and ethylene, and a small amount of water vapour. Approximately 95% of this gas is recirculated back into the reactor after reheating to 500°C, and about 5% of the hydrocarbon-rich gas (HC) is used as supplementary fuel in the boiler. The boiler

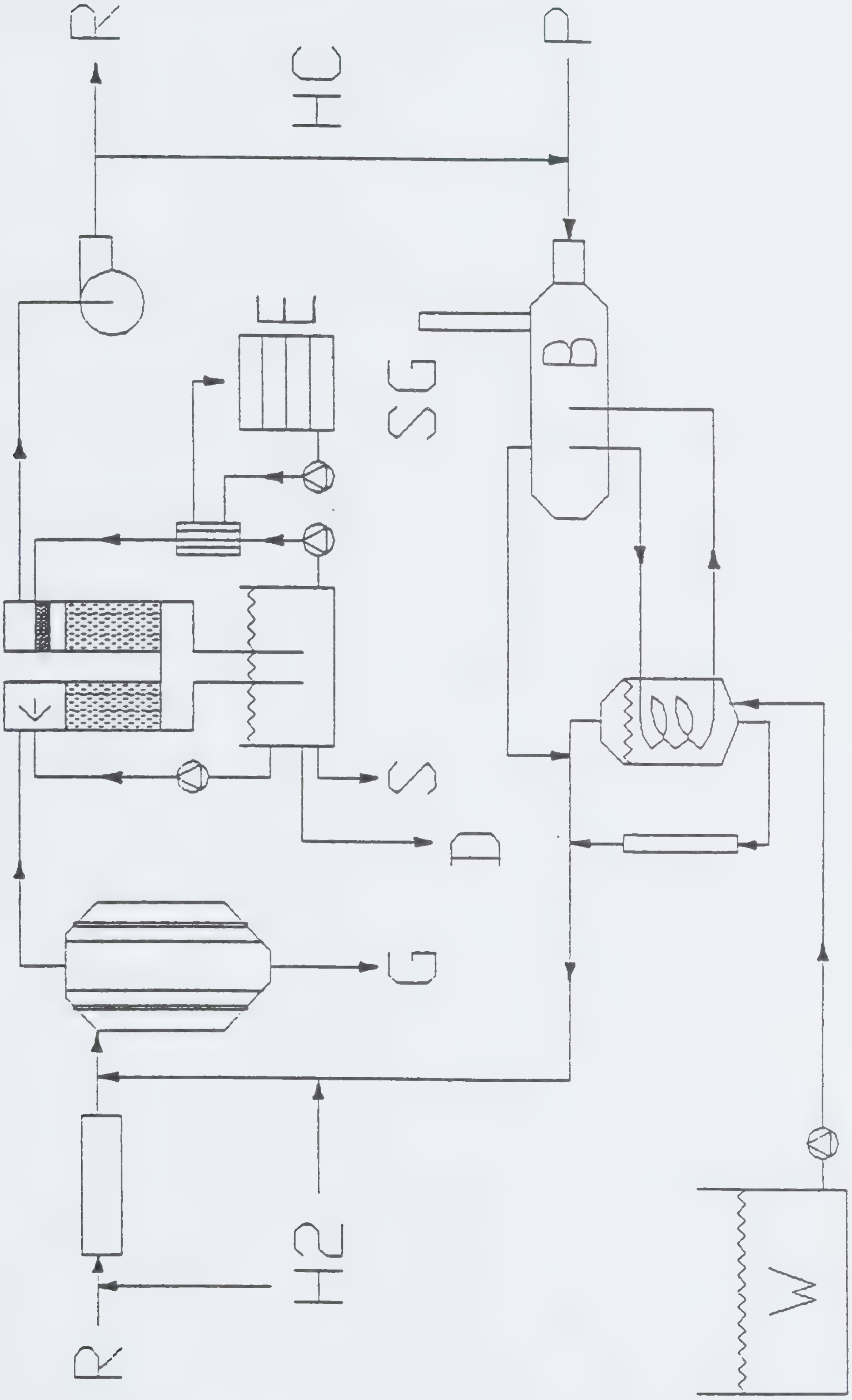


FIGURE 2 - PROCESS SCHEMATIC

uses propane (P) as its main fuel to produce steam used in the heat exchanger which preheats the waste to 150°C. The only air emissions are from the boiler in the form of stack gas (SG). Since the fuel going into the boiler is very clean, and contains no chlorine, emissions from the boiler should be insignificant.

In case of a process upset where total destruction of hazardous organic compounds was not occurring, the on-line mass spectrometer would automatically divert all gases into a recirculation mode. The waste feed would be stopped and recirculation would continue until the continuous analysis indicated the reaction was again occurring optimally. During this time, the scrubber water may have become contaminated and require treatment itself, but no escape of or incineration of chlorinated organic compounds would occur. Since 95% of the gas stream is recirculated under normal conditions, this procedure would not be a drastic action. In the event that processing could not continue, a small charcoal scrubber would be used to capture organic compounds during purging of the reactor.

The equipment described above will soon be mounted on two standard 45-foot drop-deck trailers. A process control trailer containing the on-line mass spectrometer, process control system, and other analysis equipment would be located near the two equipment trailers.

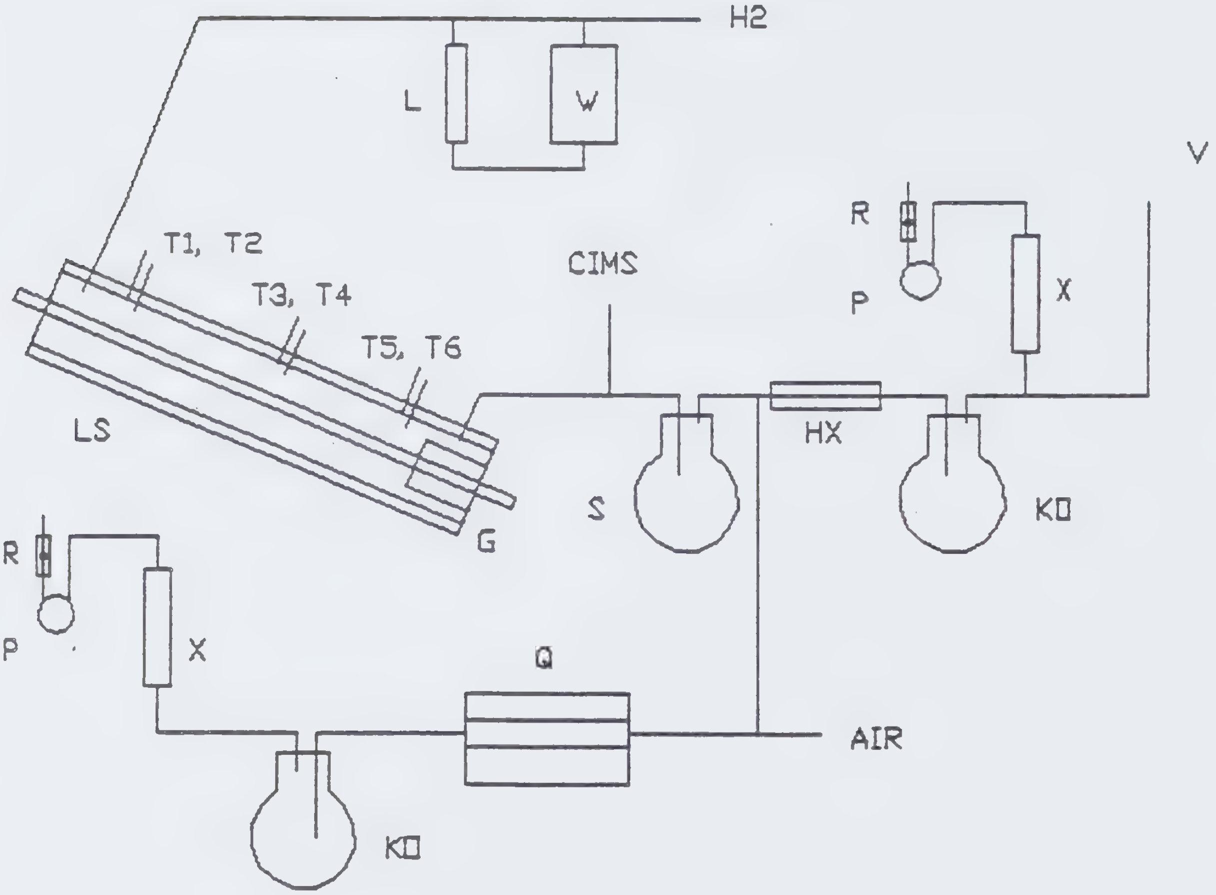
3.0 LAB-SCALE REACTOR SYSTEM

The lab reactor system is designed to mimic the operation of the pilot-scale field demonstration unit, process real waste samples, and yield information about the destruction efficiency of the process.

Figure 3 shows a schematic of the system. The lab-scale reactor (LS) is a single cylindrical chamber 12" in diameter and 72" long, and is heated by a glo-bar passing through the central axis. The reactor is insulated and has a relatively cool area (G) where solids can collect after passing through the reaction zone. Liquid waste (L), steam from the waste (S), and hydrogen (H2) are metered into the reactor at known, measured rates. The electric waste boiler (W) preheats the waste to 120-130°C. The temperature of the reactor is controlled and measured in three locations both inside and outside the inner stainless steel liner (T1-T6), so that radiant effects can be measured.

Once the gases and fine particulate exit the reactor, a small sidestream is drawn through the on-line mass spectrometer (CIMS) while the majority of the gas flows to the first condensation flask. This flask (S) simulates the scrubber in the pilot system, and is kept at 35°C so that scrubber water contamination characteristics can be simulated. Most of the gas flow then passes through a heat exchanger tube (HX) where the rest of the water is condensed and collected in the knockout flask (KO) following. The gas is then dry enough to draw some of it through an XAD2 resin trap cartridge (X) using a valved pump (P) and rotameter (R) to measure the flow. The rest of the gas is vented (V) but would normally be recirculated in the larger pilot system. By analysing the scrubber flask water, the knockout flask water, and the XAD2 resin, the total amount of contaminant not destructed by the reactor alone can be determined.

FIGURE 3 - LAB-SCALE REACTOR SYSTEM SCHEMATIC



To represent the destruction efficiency obtained using the boiler and reactor combined, a second sidestream is drawn from the main stream immediately after the scrubber flask. This is drawn through a quartz tube furnace (Q) along with air metered in through a valved rotameter. A water knockout flask dries the incinerated gas stream prior to it passing through an XAD2 resin tube system.

Several process parameters are monitored continuously with the process control system, including waste steam flowrate, waste liquid flowrate, hydrogen flowrate, reactor pressure, reactor temperatures, boiler temperature, scrubber flask temperature, knockout flask temperature, and quartz oven temperature. As well, concentrations of 10 compounds are monitored and recorded continuously by the on-line mass spectrometer system. Other process variables which remain relatively constant are recorded manually.

4.0 SCOPE OF WORK

Eco Logic will perform a set of 10 demonstration tests with the lab-scale reactor system to verify the waste destruction capabilities of the process with a number of different contaminated harbour sediment samples. Each run will process at least five litres of sediment over a period of several hours. Full documentation and records will be kept for each run. The suggested sediment samples include four from Hamilton harbour, two from Sheboygan harbour, two from Thunder Bay harbour, and two from Hamilton harbour spiked with trichlorobenzene. Sediment samples from the various locations have been, or will be, provided by Environment Canada.

Analysis of the samples will be performed by Eco Logic's laboratory, except for the metals analyses which will be done by XRAL Environmental. Some samples will be split for duplicate analysis by the Wastewater Technology Centre laboratory. As well, one or more test runs will be witnessed by Wastewater Technology Centre personnel.

5.0 SAMPLING METHODOLOGIES

To properly evaluate the destruction efficiency of the reduction process and the whole system, appropriate sampling methodologies and sampling systems are crucial. The lab-scale destructor system is constructed to provide representative samples of both input and output. Since the various samples to be tested have different contaminant characteristics, different compounds will be targeted for analysis. Several test runs will be given full analytical treatment, including analysis for dioxins, furans, PCBs, PAHs, organochlorines, base neutrals, chlorobenzenes, chlorophenols, and metals. Other runs will be analysed for target compounds only. The proposed level of analysis is given in the table below.

RUN	INPUT ANALYSIS	OUTPUT ANALYSIS	TARGET COMPOUND	WTC LAB DUPLIC.	MASS BALANCE
Hamilton 1	Full	Full	N/A	No	Yes
Hamilton 2	Target	Target	PAHs	No	No
Hamilton 3	Target	Full	N/A	Yes	Yes
Hamilton 4	Target	Target	PAHs	Yes	No
Ham/TCB 1	Target	Target	PAHs/CBs	Yes	Yes
Ham/TCB 2	Target	Target	PAHs/CBs	No	No
Sheboygan 1	Target	Target	PCBs	Yes	Yes
Sheboygan 2	Target	Target	PCBs	No	No
ThunderBay 1	Target	Target	CPs	Yes	Yes
ThunderBay 2	Target	Target	CPs	No	No

The input sampling will involve preparing a well-mixed batch of sediment for input to the boiler, and obtaining a representative 500 ml sample while it is in suspension. The boiler will then be charged with a measured amount of the well-mixed sediment. After the test is over, the boiler and recirc pump will be emptied and flushed with a measured volume of water. A representative 500 ml sample of this mixture will be taken, and both samples will be analysed to determine by difference the amount of contaminant that was processed by the reactor. If a mass balance of the water and solids is called for, duplicate samples will be obtained.

The purpose of the output sampling is to define the destruction efficiency of the various parts of the process. In order to do that, the total amount of contaminant that reaches the various impingement devices must be measured, and the amount of contaminant bypassing them must be calculated. The places where contaminants are captured include the reactor grit chamber, the scrubber flask, the heat exchanger tube, the knockout flasks, the resin traps, and the various lengths of teflon tubing between the components. The sample stream bypasses some of these components at two locations: the mass spectrometer sampling tee, and the exhaust vent. However, both of these flowrates are relatively constant so that the total amount of contaminant bypassing can be calculated.

For example, if the hydrogen flowrate is 35 Slpm into the reactor, the exit flowrate of reduced contaminants and excess hydrogen would be just slightly less than 35 Slpm, since the reduction reaction breaks single bonds primarily, yielding the same number of moles of product as reactant for straight-chain molecules, and slightly less than equal moles of product than reactant for ring structures. A conservative estimate of the vent gas flow, then, would be 35 Slpm minus the measured flows to the mass spectrometer, the quartz tube furnace, and the resin tube sampler. The amount of contaminant exiting the vent and the mass spectrometer tee can thus be calculated from the analysis of the various components, and the measured flowrates.

For analytical purposes, some of the exit sample extracts can be combined prior to analysis. This would be done, for example, in the analysis of the scrubber flask catch. The water from the flask would have the organic contaminants extracted by liquid/liquid extraction with an appropriate solvent, while the solids from the flask were soxhlet extracted. The extracts could then be combined prior to evaporating down to the final volume, and injected into the GC/MS.

Ultimately, five samples will be analysed after combining the extracts as outlined below:

SAMPLE	TYPE	COMPONENT SOURCE
Reactor Grit	Solids	Reactor
Scrubber Catch	Solids Liquid	Scrubber Flask, Lines Scrubber Flask
Scrubber Exit	Solids Liquid	Heat Exchanger, KO Flask, Lines Heat Exchanger, KO Flask, Lines
Scrubber Exit	Gas	XAD2 Resin
Incinerator Exit	Liquid Gas	Knockout Flask XAD2 Resin

There are therefore two input samples and five output samples requiring analysis for each test run. Based on the level of analysis previously outlined, a total of 18 target and two full analyses will be performed on the input samples, and 40 target and 10 full analyses will be done for the output samples. With the sample splits outlined above, it will be possible to calculate the destruction efficiencies of the overall system, as well as parts of the process such as the reactor alone, and define which components of the system are most susceptible to contaminant accumulation.

The destruction efficiency is calculated by totalling the amount of contaminant not destroyed, subtracting it from the amount of contaminant introduced, dividing that difference by the amount of contaminant introduced, and multiplying by 100%. For example, if the total weight of PAHs introduced into the reactor was 5 grams (1000 ppm x 5 litres), and the total PAHs captured and calculated to have exited was 50 ug, then the destruction efficiency would be:

$$(5,000,000 - 50) / 5,000,000 \times 100 = 99.999\ \%$$

To calculate the destruction efficiency of the reduction reaction followed by incineration, the total amount of contaminant exiting the quartz tube furnace is measured, and multiplied by the ratio of total process flowrate divided by the flowrate to the quartz tube furnace. If this calculated to 5 ug, then the destruction efficiency of the combined system would be:

$$(5,000,000 - 5) / 5,000,000 \times 100 = 99.9999\ \%$$

Besides the destruction efficiency, it may be important to know where the various contaminants were captured. For example, if very little of the PAHs were captured in the scrubber flask and the quartz tube furnace exit system, it would demonstrate that a full-scale system with the scrubber exit gases recirculated could operate without producing contaminated effluent or air emissions.

6.0 ANALYTICAL METHODOLOGIES

Methodologies for the analysis of the contaminated sediments, the processed solids, the scrubber flask and knockout flask solids and liquids, and the XAD2 resin samples have already been established between Eco Logic's lab and the Wastewater Technology Centre lab. Both labs use similar sample work-up and analytical methods. Any discrepancies between the methodologies can be rectified, if necessary, after discussions between the two lab managers. Metals analysis will also be performed by standard methodologies which can be discussed with the lab manager of XRAL Environmental.

7.0 SCHEDULE

Once approval to commence the testing program is given, the first runs will begin within one week. Two test runs per week are proposed, with the entire program of testing taking five weeks. The proposed order of test samples is as follows:

Week 1	Hamilton 1, 2
Week 2	Ham/TCB 1, 2
Week 3	Sheboygan 1, 2
Week 4	Hamilton 3, 4
Week 5	ThunderBay 1, 2

Data reports will be forwarded to the Wastewater Technology Centre when they are obtained from the lab, allowing preparations to proceed regarding pilot-scale demonstration testing prior to release of the final report. A full report with all the data, test conditions, calculations, and conclusions will be produced within four weeks of completion of the last test run.

8.0 COST SHARING ARRANGEMENT

To date, the costs of the research performed on this process have been borne by Eco Logic, the Department of National Defence, and the National Research Council. Remaining funds available from National Defence are allocated primarily for research into the materials and component testing, and system integrity testing of the pilot-scale field unit. The cost breakdown for the proposed test program is outlined below:

Test Run Personnel

Kelvin Campbell, P.Eng.	Supervisor	10 days @ $600	$ 6,000
Craig McEwen, P.Eng.	Supervisor	5 days @ $500	2,500
Elizabeth Chisholm, B.Sc.	Lab Manager	5 days @ $500	2,500
Rodney Resch, B.S.T.	CIMS-500	10 days @ $400	4,000
Calvin Huong, B.A.Sc.	CIMS-500 Data	10 days @ $300	3,000
Bill MacTaggart	Process Control	12 days @ $250	3,000
Alice Barker	Sampling, Prep	15 days @ $200	3,000
Gary Maltby	R&D Technician	12 days @ $250	3,000
Rohan Perera	R&D Technician	20 days @ $250	5,000
Total Test Run Fees			$32,000

Analysis

12 Full Analysis Samples	Dioxins/Furans @ $1200	$14,400
	PCBs, CBs, OCs @ $300	3,600
	PAHs @ $300	3,600
	Base Neutrals @ $300	3,600
	Chlorophenols @ $300	3,600
	Metals @ $300 (8 samples)	2,400
14 Target Analysis Samples	PAHs and Chlorobenzenes @ $500	7,000
16 Target Analysis Samples	PAHs @ $300	4,800
14 Target Analysis Samples	PCBs @ $300	4,200
14 Target Analysis Samples	Chlorophenols @ $300	4,200
Total Analytical Fees		$51,400

Report Preparation

Kelvin Campbell, P.Eng.	Supervisor	10 days @ $600	$ 6,000
Elizabeth Chisholm, B.Sc.	Lab Manager	5 days @ $500	2,500
Rodney Resch, B.S.T.	CIMS-500	10 days @ $400	4,000
Total Report Preparation Fees			$12,500

The total cost for the project is therefore $95,900. As it is in Eco Logic's best interests to speed the development of this process, 20% of the cost of the project will be borne by Eco Logic. This reduces the overall cost by $19,180 to $76,720, and is a measure of our confidence in this hazardous waste destruction process.

Since the project will be spread out over a period of several months, 40% of the total, or $30,688, will be invoiced after completion of the first five tests, and again after the second five tests. The remaining 20%, or $15,344, will be invoiced after delivery of the final report.

2.2

CITY OF TORONTO

Department of the City Clerk
City Hall, Toronto, Ontario, Canada M5H 2N2
Telephone 392-7026
Fax 392-6990
TDD 392-7354

Barbara Caplan / City Clerk

Sydney Baxter / Deputy City Clerk

Reply to: C. Dodds, 392-7031

Please refer to: 90exec22-31:4

October 10, 1990

TO: ALL ONTARIO MUNICIPALITIES
WITH A POPULATION OVER 50,000

City Council at its meeting held on October 1 and 2, 1990, gave consideration to the attached Clause 31 contained in Report No. 22 of the Executive Committee, entitled "Implementation and Enforcement of the CFC (Chlorofluorocarbon) By-law No. 30-89".

During consideration of this Clause, Council also had before it a report (September 27, 1990) from the City Solicitor.

Council adopted the following recommendations:

1. That By-law No. 230-89, as amended, be repealed and replaced with the draft by-law attached to the report (September 27, 1990) from the City Solicitor, that such draft by-law be approved, and authority be granted for the introduction of the necessary Bill in Council to implement the draft by-law, and further that City Council approve the establishment, by the Medical Officer of Health, of temporary personnel positions to implement and enforce the by-law, as described in the joint report (September 12, 1990) from the Medical Officer of Health tne the City Solicitor.

2. That the City Solicitor be authorized to continue to seek special legislation from the Province by way of amendment of the City of Toronto Act, substantially in the form of draft legislation proposed on February 9, 1989, with the exception that Section 1 be amended in accordance with this report (Section 3.3).

October 3, 1990

3. That the joint report (September 12, 1990) from the City Solicitor and the Medical Officer of Health be disseminated to all Ontario municipalities with populations greater than 50,000 people.

4. That the Medical Officer of Health and the Executive Director, Management Services Department, report to Executive Committee with a detailed strategy and budget requirements to give effect to the implementation and enforcement of the amended by-law as soon as possible.

5. That the City Solicitor, in consultation with Councillor O'Donohue and the Medical Officer of Health, report further on including in the by-law, 'methylchloroform' and 'methyltetrachloride'.

Yours truly,

B Caplan
City Clerk

IR/bb

Encl.

c.c. Medical Officer of Health
City Solicitor
Executive Director of Management Services
Budget Review Group
Councillor O'Donohue

CITY OF TORONTO
DEPARTMENT OF THE
CITY CLERK

CLAUSE EMBODIED IN REPORT NO. 22 OF THE
EXECUTIVE COMMITTEE WHICH WAS AMENDED AND
ADOPTED BY CITY COUNCIL AT ITS MEETING
HELD ON OCTOBER 1 & 2, 1990

31

IMPLEMENTATION AND ENFORCEMENT OF THE CFC (CHLOROFLUOROCARBON) BY-LAW NO. 30-89

The Executive Committee recommends that:

1. **the CFC By-law (No. 230-89) be amended substantially in the form set out in Appendix B of the joint report (September 12, 1990) from the City Solicitor and the Medical Officer of Health and authority be granted for the introduction of the necessary bill in Council to give effect thereto, subject to approval by City Council for the Medical Officer of Health to establish temporary positions to implement and enforce the by-law.**
2. **the City Solicitor be authorized to continue to seek special legislation from the Province by way of amendment of the City of Toronto Act, substantially in the form of draft legislation proposed on February 9, 1989, with the exception that Section 1 be amended in accordance with this report (Section 3.3).**
3. **the joint report (September 12, 1990) from the City Solicitor and the Medical Officer of Health be disseminated to all Ontario municipalities with populations greater than 50,000 people.**
4. **the Medical Officer of Health and the Executive Director, Management Services Department, report to Executive Committee with a detailed strategy and budget requirements to give effect to the implementation and enforcement of the amended by-law as soon as possible.**

The Executive Committee advises that it has requested the City Solicitor to report directly to City Council on October 1, 1990, on the final form of the by-law.

The Executive Committee further advises that it has requested the Budget Review Group to report to a subsequent meeting of the Executive Committee on the financial implications of the proposed by-law.

The Executive Committee submits the joint report (September 12, 1990) from the Medical Officer of Health and the City Solicitor:

Origin: Medical Officer of Health and City Solicitor, August 18, 1988, (c34exec90065:632)

Recommendations:

1. That the CFC By-law No. 230-89 be amended as proposed in Appendix B of this report and authority be granted for the introduction of the necessary by-law in City Council to give effect thereto, subject to approval by City Council for the Medical Officer of Health to establish temporary positions to implement and enforce the by-law.
2. That the City Solicitor be authorized to continue to seek special legislation from the Province by way of amendment of the City of Toronto Act, substantially in the form of draft legislation proposed on February 9, 1989, with the exception that Section 1 be amended in accordance with this report (Section 3.3).

3. That this report be disseminated to all Ontario municipalities with populations greater than 50,000 people.
4. That the Medical Officer of Health and the Executive Director, Management Services Department, report to Executive Committee with a detailed strategy and budget requirements to give effect to the implementation and enforcement of the amended by-law as soon as possible.

Summary:

The City CFC (Chlorofluorocarbon) By-law (No. 230-89) was passed by Council on April 9, 1989, and amended, with respect to the dates of its coming into force, on June 29, 1989. A detailed program plan for its implementation and enforcement, submitted to the Executive Committee (May 2, 1989) by the Medical Officer of Health and the Executive Director, Management Services Department, was approved by the Budget Review Group at its meeting of July 11, 1989, and was forwarded to the Executive Committee. At its meeting of August 8, 1989, the Executive Committee put the program plan on hold for one month. Executive Committee then requested that the Medical Officer of Health consult with the City Solicitor, the Ontario Ministry of the Environment and Environment Canada regarding provincial and federal regulatory initiatives that would supersede sections of the City By-law.

The report provides an update on activities by other jurisdictions regarding the control of CFCs. In addition, an amended by-law and program plan are presented, in which the initiatives and areas of responsibility of the provincial and federal governments jurisdictions are more closely integrated with those of the City.

City of Toronto Department of Public Health

Proposed Amendments to the City CFC By-Law No. 230-89
September 12, 1990

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Appendices

Appendix A: City CFC By-law
Appendix B: Proposed Amended By-law
Appendix C: Projected Ontario Phase-Out Highlights For Ozone Depleting Substances
Appendix D: Projected Prohibited Dates by Environment Canada for Various CFC Use Categories

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1.0 Background

1.1 The Development of the Current By-Law

The current City of Toronto CFC By-law (see Appendix A) was passed by City Council on April 6, 1989, and is intended to significantly reduce CFC and halon emissions in the City. The By-law includes: prohibitions on the manufacturing of products or equipment that emit or could emit CFCs or halons to the atmosphere; restrictions on the method of disposal of such products or equipment; prohibitions on the venting of CFCs or halons to the atmosphere during the repair or testing of equipment; prohibitions on the sale of various products that release CFCs during manufacturing processes; and the requirement for all companies handling these chemicals as part of their business activity to register with and provide specific information to the Medical Officer of Health on the types and quantities of CFCs used.

The concept behind the by-law originated with a motion of City Council on August 18, 1988. Council referred the motion at that time to the City Solicitor and the Medical Officer of Health for report to the Executive Committee. The Executive Committee considered the motion along with submissions by the City Solicitor and the Medical Officer of Health at its meeting of August 31, 1988. The subsequent Executive Committee Report No. 32, Clause 66 contained nine recommendations concerning the manufacture, sale, distribution and use of chlorofluorocarbons and halons in the City of Toronto. Included in these recommendations were the original recommendations of City Council's motion, as well as the recommendation that the Medical Officer of Health report to The Board of Health on the options for a CFC reduction strategy for the City, and a recommendation that the City Solicitor be authorized to draft and seek special legislation to strengthen and extend Council's authority for the passage of CFC by-laws. This clause was adopted by City Council at its meeting of September 6 and 9, 1988. Subsequently, the Medical Officer of Health submitted a "CFC Reduction Strategy for the City of Toronto" to the Board of Health for consideration at its meeting of November 24, 1988. This report was sent to Council with the recommendation that it be adopted. The City Solicitor submitted a draft by-law to the Executive Committee for consideration at its meeting of December 13, 1988. At that meeting, the Executive Committee adopted both the CFC Reduction Strategy and the new by-law.

On January 11, 1989, the Board of Health heard a number of deputations with respect to the proposed CFC reduction strategy. The Board then directed the City Solicitor to amend the draft by-law and the Medical Officer of Health to report on the elements of a program necessary to implement and enforce the by-law. A joint report to the Board of Health by the City Solicitor and the Medical

Officer of Health in February of 1989 recommended amendments to the draft by-law and suggested elements of a program for its implementation and enforcement. This report, along with a number of other deputations, was considered by the Board of Health on February 22, 1989. The recommendations of the Board of Health were passed to Executive Committee, whose members then requested more detailed program and budget information. The by-law was passed by Council on April 9, 1989, and a subsequent report (May 2, 1989) to Executive Committee from the Medical Officer of Health and the Executive Director, Management Services, provided a more detailed Program plan and budget for review by Executive Committee and Budget Review Group.

At the City Council meeting of June 29, 1989, the by-law was amended by setting the implementation dates for each of the clauses back by four to six months (see Appendix A). Other than amending the implementation schedule, no substantive changes were made to the text of the by-law. The implementation and enforcement program plan budget, with a reduction for 1989 due to delayed implementation, was approved by Budget Review Group at its meeting of July 11, 1989, and passed to Executive Committee. At its meeting of August 8, 1989, the Executive Committee requested that the Medical Officer of Health consult with the City Solicitor, the Ontario Ministry of the Environment and Environment Canada regarding provincial and federal regulatory initiatives that would supersede sections of the City by-law. This consultation has experienced a number of frustrating delays but a clearer picture of the emerging regulatory framework has been the result.

1.2 The Original Implementation and Enforcement Plan for the Current By-Law

The original Program Plan submitted to the Executive Committee called for the creation of a CFC team of four temporary employees operating as part of the Environmental Protection Office, Department of Public Health. The staff of the team would include a Hazardous Waste Minimization Coordinator, a Research Assistant, a Hazardous Waste Officer, and a Central Resources Clerk. Additional space would be rented. New equipment would be purchased, including furniture and computer equipment, for one-time-only expenses of $12,217. The total annual cost of the program was estimated at $270,000. It was expected that the funding would be required for three years only, after which a reduced program would be integrated into Environmental Health and Inspection Services of the Department of Public Health.

1.3 Influence of the City CFC By-Law on Other Jurisdictions

The City CFC By-law has been partly responsible for stimulating action on the CFC issue in other jurisdictions. In February of 1989, prior to the passing of the by-law by Council, but after the City CFC reduction strategy and draft by-law had been made public, both the Ontario Minister of the Environment and the Federal Minister of the Environment announced CFC control initiatives (see Section 2.0). The areas of CFC use to be controlled by the Provincial and Federal initiatives overlap to some degree with the areas covered by the City by-law. Consequently, questions were raised at the various City committees reviewing the by-law and its implementation plan as to the redundancy of the by-law with respect to the newly announced provincial and federal initiatives.

The City by-law resulted in considerable activity in other Canadian municipalities to initiate similar local CFC by-laws. It has been argued that the result has been a "patchwork quilt" of CFC regulation across Canada wherein each jurisdiction has established different CFC legislation. To respond to this problem, the Federal Government formed in September of 1989 the Ad Hoc Working Group of the Federal-Provincial Canadian Environmental Protection Act Advisory Committee, to harmonize CFC-control regulations at the various levels of government in Canada. A staff member of the City of Toronto's Environmental Protection Office was invited to join that working group and currently sits on the committee.

The remainder of this report summarizes the initiatives at higher levels of government, presents a proposed set of amendments to the City's current CFC By-law to complement these initiatives and the work of the Ad Hoc Group, and introduce a program of implementation and enforcement for the amended by-law that is reduced in scope and cost from the one originally proposed.

2.0 Review of CFC Control Initiatives in Other Jurisdictions

2.1 Ontario

The Ontario Legislature passed Bill 218, "An Act to Amend the Environmental Protection Act", effective June 20, 1989. Under this Bill, Part V of the Environmental Protection Act (EPA) was amended to include a number of sections dealing with ozone depleting substances, including a section enabling the creation of regulations to control these substances. The regulations under the Ontario EPA are intended to phase out the use of CFCs in most areas over a number of years (see Appendix C). Aerosols and rigid foam packaging made with CFCs are already prohibited under Regulation 394/89, promulgated June 30, 1989. However, sell-through periods of three and six months respectively were built into the regulation, along with a list of exempted aerosol uses.

On May 3, 1990, the Minister announced a second set of initiatives to cut in half Ontario's consumption of CFCs and to facilitate CFC recycling. Consumption is to be reduced by a phased reduction of CFCs in rigid foam insulation, ending in a complete ban by December 31, 1993. Insulation in appliances, water heaters, refrigerated vehicles and rail cars will be exempt until substitutes are developed. Further reductions will arise from the immediate ban of home refrigerator/auto air conditioner repair kits and from the removal of the exemption for CFCs as aerosol propellants for certain drugs and medicines.

Recycling will be facilitated by a requirement for the capture and recycling of CFCs during the maintenance and servicing of automobile air conditioners, truck and rail car refrigeration units as of July 1, 1991. A recycling infrastructure will be further facilitated by exempting CFCs from many of the province's manifest requirements under Regulation 309 of the EPA.

The Ministry of the Environment has not yet released regulations or regulatory amendments to support these initiatives. These are expected during the month of September (OMOE, 1990).

2.2 Canada

The Federal Minister of the Environment has announced his government's intention to eliminate the use of designated CFCs with high ozone depletion potential in Canada by 1997 (Environment Canada, 1990a). Regulations under the Canadian Environmental Protection Act (CEPA) limiting future production (including imports) of CFCs to 50 percent of 1986 levels are already in place. It is anticipated that these will be amended in the next year or two to achieve the stated goal of 100 percent elimination (Environment Canada, 1990b).

In addition, regulations have been made public (Supply and Services Canada, 1989) that set a timetable for the prohibition of a number of products that contain ozone depleting substances, and that prohibit the production and set limits on the importation of halons.

The new regulations are part of a long-term schedule by the Federal Government for the phasing out of CFCs and halons (see Appendix D). With respect to specific CFC uses, the new regulations prohibit:

1. The manufacturing, import or sales of aerosols and other small, non-essential products containing pressurized CFCs, with a three-year delay for certain important commercial uses, and a complete exemption for medical uses;
2. The manufacture, import, or sale of food packaging materials or containers in the production of which CFCs were used as foaming agents;
3. The manufacture, import or sale of hand-held halon or CFC-containing fire extinguishers, with the exception of their use for fire prevention on military tactical service vehicles and large airplanes.

Regulations regarding numbers 1 and 2 above are expected to be promulgated by late Autumn 1990, while a draft regulation on hand-held fire extinguishers is expected to be made public later this year. In addition, discussions between the Federal Government and industry are on-going with respect to the future phasing out of rigid foams, packaging for non-food uses, flexible foams, refrigerants, solvents, and other uses of CFCs (see Appendix D).

2.3 Overlap of Federal, Provincial and Municipal Initiatives

Table 2.1 compares the Sections of the City of Toronto CFC By-law, the Ontario Ministry of the Environment schedule to regulate under the EPA, and the Federal Government schedule to regulate under the CEPA. The types of initiatives can be classified into six main groups: database development, production controls, manufacturing/sales prohibitions or restrictions, emission controls, disposal, recovery and recycling initiatives, and long-term substitution requirements.

Database development is assisted by legislation at all three levels of government, but the criteria are different at each level. The federal government, under CEPA, collects information on the producers, importers and exporters, and major users of CFCs. This effort has been proceeding since 1987 (Environment Canada, 1990b).

The provincial government collects information under Regulation 309 of the EPA on those firms that generate CFC 11 and CFC 113 as part of the servicing of commercial coolers, freezers, and air conditioning units, and firms that subsequently transport these CFCs to recovery facilities. Unfortunately, regulatory requirements under Regulation 309 currently make the transportation of recycled CFCs a cumbersome administrative exercise. In an effort to facilitate CFC recovery and recycling, the OMOE is expected to streamline the requirements of this regulation as they relate to CFCs to reduce the paperwork burden on many individuals and companies who handle them. When these amendments are in place, it is anticipated that more information on CFC movements and quantities will become available and a complete CFC database will be set-up (OMOE, 1990). With regard to our own jurisdiction, the City's existing CFC By-law requires registration with the Medical Officer of Health by all firms that handle or use CFCs or halons in the course of their business activity.

The control of production, including importing and exporting, is clearly in the federal jurisdiction, and was never included in provincial initiatives or in the City by-law. Manufacture is prohibited in the current City By-law to the extent that alternatives to CFCs exist. However, it would appear that the federal government, by way of regulation, investigation and consultation with industry, will ensure that the manufacture of a product will be prohibited within a reasonable time period following the approval of any feasible alternative.

More significant overlaps do occur in the areas of sales prohibitions and emission controls. The principal areas of overlap are in aerosols, foam insulation, and packaging bans. In the case of aerosols and foam packaging, the Province's regulations have preceded the City's By-law, and the federal regulations are also expected to do so. The Provincial regulations on foam insulation proposes a phase out by 1993, three years later than the implementation date set by the City By-law. This provincial phase-out timetable has been developed in consultation with industry representatives. Although the City of Toronto may have preferred to see an earlier implementation date for provincial action, it appears that the delays are due largely to technical considerations, and not to political or bureaucratic inaction. It is therefore unlikely that the City could have accelerated the process substantially. Federal regulations in this area have not yet been announced, but are expected to permit industry more time to comply than do the proposed provincial regulations.

In contrast to the areas of overlap identified above, emission control, recovery and recycling of refrigerants from commercial, institutional or domestic air conditioning and refrigeration systems are regulated by the City by-law alone. The OMOE has proposed regulations directed at mobile air conditioners and refrigerators for automobiles, trucks and rail cars, but has not yet announced any regulatory action directed at stationary commercial, institutional or domestic units.

In place of regulation, the Ministry has consulted extensively with industry representatives in an effort to encourage and accelerate the development of a recycling infrastructure. These discussions have resulted in the proposed amendments to Regulation 309 and a preliminary strategy for the set-up of an infrastructure operated by the private sector. There are no immediate plans to require service technicians to feed into the system. Instead, the OMOE is hoping that industry pressure, along with the availability of a convenient and accessible recycling infrastructure, will provide sufficient incentive to recycle voluntarily. However, Ministry officials have indicated that regulation will be considered in the future if recycling does not occur at a satisfactory level (OMOE, 1990)

With regard to the question of disposal, once again there appears to be no overlap between the City's by-law and either provincial or federal initiatives. The Department of Public Works (DPW) is currently in the middle of a trial program for the recovery of refrigerant from discarded household refrigerators and freezers. According to the DPW's progress report, the refrigerant had escaped from almost 99 percent of the discarded appliances prior to their return to the collection depot. A further update is expected in September. In addition, the OMOE has been in contact with the DPW and is proposing a second pilot project that would attempt to determine when these refrigerants are actually released (OMOE, 1990).

In summary, Table 2.1 clearly illustrates two areas where the CFC By-law does not overlap with the initiatives from the higher levels of government. Sections 4 and 5 of the City CFC By-law (see Appendix A), dealing with methods of disposal of equipment containing CFCs and the recovery of those CFCs, and Section 6, dealing with the prohibition against the venting to the air of CFCs from any equipment containing coolants during servicing, are not paralleled in the federal or provincial regulations.

3.0 Implications for the CFC By-law of the Provincial and Federal Initiatives

Given the breadth and nature of the regulations being developed at the provincial and federal levels, as well as the work on harmonization being conducted across three levels of government, the City CFC By-law as it currently exists may no longer be appropriate. As indicated above, some of the Sections duplicate current or forthcoming provincial and federal regulations.

Conversely, the Ad Hoc Working Group of the Federal-Provincial Canadian Environmental Protection Act Advisory Committee has identified certain areas which the members feel are most appropriate for municipal initiatives. These include: the recovery and recycling of CFCs from equipment such as refrigeration equipment destined for disposal; the monitoring and enforcement of recovery and recycling of CFCs by commercial users of such equipment; and the establishment of recovery and recycling requirements under various permitting programs at the municipal level.

It is, therefore, recommended that the existing CFC By-law be amended to eliminate areas of duplication. A detailed rationale for each proposed amendment is provided in Section 3.1. and summarized at the end of the section. The proposed amended by-law is attached as Appendix B. The current CFC By-law is attached as Appendix A for reference.

3.1 Proposal and Rationale for an Amended By-law

What follows is a discussion of each section of the current by-law, providing a rationale for each recommended amendment.

Section 1: (to be retained with amendments)

"1. In this By-law,

(a) "City" means the City of Toronto;

(b) "Chlorofluorocarbons" means one or more of the following substances:

Trichlorofluoromethane	(CC13F)	known as CFC 11
Dichlorodifluoromethane	(CC12F2)	known as CFC 12
Trichlorotrifluoroethane	(C2C13F3)	known as CFC 113
Dichlorotetrafluoroethane	(C2F4C12)	known as CFC 114
Chloropentafluoroethane	(C2F5C1)	known as CFC 115

(c) "dispose" means to dispose for the purpose of garbage, refuse, or for destruction, and not for re-use;

(d) "halons" means one or more of the following substances:

difluorobromochloromethane	CF_2BrCl	known as halon 1211
trifluorobromomethane	CF_3Br	known as halon 1301
tetrafluorodibromoethane	$C_2F_4Br_2$	known as halon 2402

(e) "sell" means to offer for sale, expose for sale, have in possession for sale and distribution, whether or not the sale or distribution is made for consideration."

This Section defines terms, and thus should remain unchanged with the exception of the deletion of sub-Section (e), which deals with the definition of the term "sell". Since the proposed amendments include the deletion of all Sections pertaining to sales, this definition is not required.

Section 2: (to be deleted)

"2. No person in the City shall manufacture any product or equipment which contains and emits or could emit chlorofluorocarbons or halons or both into the atmosphere, unless

(1) there is, at the time of manufacture, no alternative to the use of the chlorofluorocarbons or halons, and there exists in connection with such manufacture, a properly operating recovery system for the chlorofluorocarbons or halons; and

(2) an audit for chlorofluorocarbons and halons has been conducted in accordance with Section II."

As many of the products covered by this Section are also covered by current or upcoming provincial and federal regulations, and as the manufacture and import (and thus the availability) of the controlled CFCs will be phased out by 1997 by the federal regulations now under development, this Section should be deleted from the amended by-law. This amendment will also be in the spirit of cooperation with the harmonization efforts of the Ad Hoc Working Group.

Section 3: (to be deleted)

"3. No person in the City shall manufacture products or equipment containing chlorofluorocarbons or halons that can be drained or recovered from the product or equipment unless the product or equipment is equipped or designed so as to permit the proper installation or use for its intended purpose without leakage of the chlorofluorocarbons or halons."

As with Section 2, and for the same reasons, this Section should be deleted from the amended version.

Section 4: (to be retained unamended)

"4. Every person in the City who disposes of any product or equipment that contains chlorofluorocarbons or halons in a form which can be drained or recovered from the product or equipment shall only dispose of such product or equipment

(1) by delivering such product or equipment to a recovery site established by the City or authorized by the Council of the City;

(2) by delivering such items for municipal garbage disposal in accordance with garbage recovery systems established by the City; or

(3) by ensuring that prior to disposal, the chlorofluorocarbons and halons contained therein are drained and recovered from the product or equipment and thereafter transported intact to a recovery site established or authorized by the City."

This Section deals with the proper disposal of products or equipment containing CFCs. Traditionally, the responsibility for municipal solid waste disposal is that of municipal and/or regional governments, and Table 2.1 shows that neither of the two higher levels of government have indicated their intention to regulate in this area. Accordingly, this area of CFC control has been identified by the Ad Hoc Working Group as being appropriate for municipal jurisdiction. This Section should remain in the amended by-law as Section 2.

Section 5: (to be retained with amendments)

"5. Notwithstanding Section 4, no person in the City shall dispose or permit the disposal of any vehicular air conditioning unit containing chlorofluorocarbons unless the chlorofluorocarbons are removed prior to such disposal."

This Section should remain in the amended by-law as Section 3 for the same reasons as indicated above, with the addition of the words "and recovered" after the word "removed" to ensure that refrigerant is not removed and released.

Section 6: (to be retained unamended)

"6. No person in the City shall service or repair or permit the servicing or repair of any air conditioner, air conditioning equipment or system including any vehicular air conditioning system, chiller, refrigerator, freezer, refrigerating or cooling equipment or system, unless such person ensures that any coolant containing chlorofluorocarbons is not vented to the atmosphere during the servicing or repair process."

This Section deals with CFC emission controls during the servicing of equipment containing coolants. While emission controls to the atmosphere are often a provincial responsibility, the large number and small average size of the establishments to which this particular control measure applies would suggest that the municipality is an appropriate jurisdiction for regulation and enforcement. Again, Table 2.1 reveals that neither the provincial nor the federal governments have indicated their intention to regulate emissions of CFCs from establishments servicing cooling and refrigeration units of various kinds. Thus, this Section should remain unchanged as Section 4 in the amended version of the CFC By-law.

Section 7: (to be deleted)

"7. No person in the City shall sell or install any rigid foam material for building insulation that contains chlorofluorocarbons or with respect to which chlorofluorocarbons are used as a blowing agent during the manufacturing process."

The control measures covered by this Section are expected to be adequately covered by provincial regulations that are expected in September 1990 (see Table 2.1). Although the phase-out date is three years behind the OMOE's originally announced schedule, the reasons for the delay appear to be technical in nature and would not likely be solved by a municipal presence. Therefore, this Section should be deleted from the amended by-law.

Section 8: (to be deleted)

"8. No person in the City shall manufacture or sell any aerosol container that uses chlorofluorocarbons as a propellant, except aerosol containers of products used for medical purposes."

The control measures covered by this Section are adequately covered by federal and provincial regulations (see Table 2.1). Therefore, this Section should be deleted from the amended by-law.

Section 9: (to be retained unamended)

"9. No person in the City shall test or service any fire extinguisher or fire extinguisher system if such test or servicing causes or could cause the release of halons in the atmosphere."

Table 2.1 indicates that the proposed provincial regulations will cover the problem of halons vented into the atmosphere during testing. However, the provincial regulation is not scheduled until the end of 1992. Other initiatives in this area (see Appendices C and D) include a proposed provincial regulation requiring the recapture and recycling of halons from fire extinguishers destined for disposal, and a proposed federal regulation to ban the sale of hand-held fire extinguishers some time during 1991. It has been estimated that 20 percent of the annual production of halons is emitted to the atmosphere as a result of testing, servicing, or accidental release. By contrast, only ten percent is emitted as a result of actual use in extinguishing fires (UNEP, 1989).

The emissions due to testing, particularly those due to the testing of total flooding fire suppression systems, can be prevented through the use of proven alternative testing procedures (National Fire Protection Research Foundation, 1989; UNEP, 1989; Shanahan, 1989). Because no other jurisdiction has expressed an intention to regulate these emissions in the next two years, a large volume of halons may be needlessly vented to the atmosphere from establishments in the City of Toronto over that period if this Section is deleted from the by-law. Accordingly, it should remain in the amended by-law as Section 5.

Section 10: (to be deleted)

"10. No person in the City shall manufacture, distribute or sell any plastic foam material or any other product or material containing chlorofluorocarbons or for which chlorofluorocarbons have been used as a blowing agent during the manufacturing process, for the purpose of packaging, wrapping or containing edible or non-edible products."

This Section should be deleted from the amended by-law for the reasons indicated for Section 8.

Section 11: (to be deleted)

"11. Every employer in the City where the business activity includes the handling and use of chlorofluorocarbons or halons in furtherance of the business activity, shall

(1) within seven months after the passing of this by-law, register a notice with the Medical Officer of Health identifying the quantity, types and use of chlorofluorocarbons and halons in the business activity;

(2) within eighteen months after the passing of this by-law, conduct and submit an audit to the Medical Officer of Health which sets out a material balance of the chlorofluorocarbons and halons used in the business activity, and identifies the methods used for recovery and reclamation of the chlorofluorocarbons and halons; and

(3) if such business activity is commenced after the eighteen month period referred to in sub-section (2), register the notice required by sub-section (1) and submit the audit required by sub-section (2) to the Medical Officer of Health at the time of commencing operation of the business activity."

Information on the major users of CFCs is collected by the federal government under the authority of the Canadian Environmental Protection Act (see Part 2.3). In addition, companies servicing commercial coolers, freezers, and air conditioning units and transporting the contaminated coolants for recycling must register as generators of a hazardous waste under the Ontario Environmental Protection Act's Regulation 309. The remaining users or handlers are, for the most part, subject to the control, recovery and disposal Sections of the amended City CFC By-law (Sections 4,5 and 6 of existing by-law).

The City employee responsible for enforcing the by-law would, under the proposed revised implementation and enforcement plan (see Section 4.1), also be responsible for identifying and monitoring CFC users on an on-going basis. As these companies (service stations, refrigeration repair services, etc.) are fairly easily identified for the purpose of education programs and inspections, it is not necessary to retain the registration requirement in the amended by-law. Dropping this requirement would have the added benefit of sparing a number of firms the necessity of registration with more than one level of government. Thus, it is proposed that this Section not be included in the amended by-law.

Section 12: (to be retained with amendments)

"12. This by-law shall come into force as follows:

(1) Sections 1 and 9 shall come into force seven months after the date of passing of the by-law;

(2) Sections 2, 3, 7, 8 and 10 shall come into force eighteen months after the date of passing of the by-law; and

(3) Sections 4, 5, and 6 shall come into force twenty-four months after the date of passing of the by-law."

An amended version of this Section must be included in the new by-law, as it deals with the date on which the various Sections come into force. In order to provide sufficient time to prepare for implementation, education and enforcement, a period of four months should be set aside between the hiring of an inspector and the by-law coming into force. Consequently, Section 12 should be included in the amended by-law as Section 6, to read as follows:

"6. This by-law shall come into force on April 6, 1991."

Section 13: (to be retained with amendment)

"13. Any person who contravenes any provision of this by-law is guilty of an offence."

As this Section deals with non-compliance, it should remain in the amended by-law. The changes to be made reflect the other changes in the by-law and recent amendments to the Municipal Act and the Provincial Offences Act under which the maximum fine is now $5,000.

In summary this report recommends that the existing CFC By-law be amended as follows:

1. Delete Sections 1(e), 2 and 3, dealing with general manufacturing and sales definitions and prohibitions;
2. Insert after "unless the chlorofluorocarbons are removed" in Section 5 the words "and recovered".
3. Delete Sections 7, 8, and 10 dealing with specific product bans; 4. Delete Section 11, dealing with registration and audit requirements;
4. Delete Section 12 and substitute the following:

   "This by-law shall come into force on April 6, 1991."
5. Amend Section 13 to update it with the current provisions of the Municipal Act and Provincial Offences Act.

The amendments outlined above would result in the retention of:

1. Sections 1 and 12 (in slightly modified form), dealing with definitions and dates of coming into force;
2. Sections 4 and 5, dealing with the disposal of products and equipment containing CFCs and the recovery of the CFCs;
3. Sections 6 and 9, dealing with the prohibition of CFC emissions to the atmosphere during the servicing of equipment or the testing of fire extinguishers;
4. Section 13, dealing with offences.

3.2 Enabling Legislation for the City By-Law

The City Solicitor advises that the authority for the by-law would be section 104 of the Municipal Act but that since such authority is not free from doubt then the City should seek special legislation, but that it would be appropriate to amend Section 1 of the Draft Legislation previously before Council to read as follows:

> "1. The Council of the Corporation may pass by-laws for regulating the disposal of chlorofluorocarbons and halons, and the testing, servicing and repair of products, material and equipment containing or manufactured using chlorofluorocarbons or halons."

4.0 Implementation and Enforcement Plan

The Medical Officer of Health and the Executive Director, Management Services Department should be directed to report to Executive Committee with a detailed implementation and enforcement plan including budget requirements to give effect to the implementation and enforcement of the amended by-law as soon as possible. A brief description of the staffing requirements and timing of this implementation plan is given in the following section.

4.1 Staffing Requirements and Timing

It is proposed that the implementation and enforcement of the amended by-law be the responsibility of one Public Health Inspector (PHI) working on secondment as part of a two-year pilot program. It is also proposed that the new temporary position be created in Environmental Health Services, Eastern Health Area. Although the position would be based in the Environmental Services Office of the Eastern Health Area, and would report directly to the Manager of that office, the area of responsibility with respect to the duties of implementation and enforcement would be the entire City of Toronto.

It is further proposed that the pilot program be commenced on December 1, 1990, four months in advance of the coming into force (April 6, 1991) of the amended by-law, and that the need for continuation of the program be evaluated in the six months prior to its termination on November 30, 1992. It should be noted that the length of time that the program would be in operation after the coming into force of the by-law would be 20 months.

References

1. Environment Canada. 1990a. (Press Release) Ottawa. June 20, 1989.
2. Environment Canada. 1990b. Tim Leah, Commercial Chemicals Branch, Personal Communication, August 29, 1990.
3. National Fire Protection Research Foundation. Enclosure Integrity Procedure for Halon 1301 Total Flooding Fire Suppression Systems. Casey Grant, Ed. January 10, 1989.
4. Ontario Ministry of the Environment. Ontario Phase-Out of Ozone Depleting Substances (Factsheet). Toronto. February 1989.
5. Ontario Ministry of the Environment (OMOE). 1990. Sharon Suter, Waste Management Branch. Personal Communication, August 29, 1990.
6. Shanahan, Walter J. Fire Chief's Report to Board of Health on the Use of Halons as an Extinguishing Agent. January 6, 1989.
8. Supply and Services Canada. Canada Gazette. Part I. Vol. 123, No. 46. November 18, 1989. pp. 5034-5059.
9. United Nations Environment Program (UNEP). Montreal Protocol Assessment, Technology Review: Final Report of the Halons - Technical Option Committee. August 11, 1989.

Appendix A

Existing By-law

City of Toronto CFC By-law

No. 230-89 A By-law

To prohibit and regulate the manufacture, use, distribution, recovery and disposal of certain products, material, and equipment containing or manufactured with chlorofluorocarbons and halons.

(Passed April 6, 1989.)

Whereas the Council of the City is of the opinion that the destruction of the ozone layer of the earth's atmosphere is caused in part by the action of ultra-violet rays on certain synthetic chemicals known as chlorofluorocarbons and halons;

And whereas the depletion of the ozone layer will allow excess ultra-violet rays to reach the earth's surface, which may cause serious irreparable damage to all living tissues;

And whereas such chemicals are found in various manufactured products, material and equipment including such items as certain refrigerators, air-conditioning and cooling systems, rigid foam insulation, certain flexible foam materials, cleaning solutions and packaging for food and other matter;

Therefore the Council of the Corporation of the City of Toronto enact as follows:

1. In this By-law,

(a) "City" means the City of Toronto;

(b) "Chlorofluorocarbons" means one or more of the following substances:

Trichlorofluoromethane	(CC13F)	known as CFC 11
Dichlorodifluoromethane	(CC12F2)	known as CFC 12
Trichlorotrifluoroethane	(C2C13F3)	known as CFC 113
Dichlorotetrafluoroethane	(C2F4C12)	known as CFC 114
Chloropentafluoroethane	(C2F5C1)	known as CFC 115

(c) "dispose" means to dispose for the purpose of garbage, refuse, or for destruction, and not for re-use;

(d) "halons" means one or more of the following substances:

difluorobromochloromethane	(CF2BrC1)	known as halon 1211
trifluorobromomethane	(CF3Br)	known as halon 1301
tetrafluorodibromoethane	(C2F4Br2)	known as halon 2402

(e) "sell" means to offer for sale, expose for sale, have in possession for sale and distribution, whether or not the sale or distribution is made for consideration.

2. No person in the City shall manufacture any product or equipment which contains and emits or could emit chlorofluorocarbons or halons or both into the atmosphere, unless

   (1) there is, at the time of manufacture, no alternative to the use of the chlorofluorocarbons or halons, and there exists in connection with such manufacture, a properly operating recovery system for the chlorofluorocarbons or halons; and

   (2) an audit for chlorofluorocarbons and halons has been conducted in accordance with Section II.

3. No person in the City shall manufacture products or equipment containing chlorofluorocarbons or halons that can be drained or recovered from the product or equipment unless the product or equipment is equipped or designed so as to permit the proper installation or use for its intended purpose without leakage of the chlorofluorocarbons or halons.

4. Every person in the City who disposes of any product or equipment that contains chlorofluorocarbons or halons in a form which can be drained or recovered from the product or equipment shall only dispose of such product or equipment

   (1) by delivering such product or equipment to a recovery site established by the City or authorized by the Council of the City;

   (2) by delivering such items for municipal garbage disposal in accordance with garbage recovery systems established by the City; or

(3) by ensuring that prior to disposal, the chlorofluorocarbons and halons contained therein are drained and recovered from the product or equipment and thereafter transported intact to a recovery site established or authorized by the City.

5. Notwithstanding Section 4, no person in the City shall dispose or permit the disposal of any vehicular air conditioning unit containing chlorofluorocarbons unless the chlorofluorocarbons are removed prior to such disposal.

6. No person in the City shall service or repair or permit the servicing or repair of any air conditioner, air conditioning equipment or system including any vehicular air conditioning system, chiller, refrigerator, freezer, refrigerating or cooling equipment or system, unless such person ensures that any coolant containing chlorofluorocarbons is not vented to the atmosphere during the servicing or repair process.

7. No person in the City shall sell or install any rigid foam material for building insulation that contains chlorofluorocarbons or with respect to which chlorofluorocarbons are used as a blowing agent during the manufacturing process.

8. No person in the City shall manufacture or sell any aerosol container that uses chlorofluorocarbons as a propellant, except aerosol containers of products used for medical purposes.

9. No person in the City shall test or service any fire extinguisher or fire extinguisher system if such test or servicing causes or could cause the release of halons in the atmosphere.

10. No person in the City shall manufacture, distribute or sell any plastic foam material or any other product or material containing chlorofluorocarbons or for which chlorofluorocarbons have been used as a blowing agent during the manufacturing process, for the purpose of packaging, wrapping or containing edible or non-edible products.

11. Every employer in the City where the business activity includes the handling and use of chlorofluorocarbons or halons in furtherance of the business activity, shall

(1) within seven months after the passing of this by-law, register a notice with the Medical Officer of Health identifying the quantity, types and use of chlorofluorocarbons and halons in the business activity;

(2) within eighteen months after the passing of this by-law, conduct and submit an audit to the Medical Officer of Health which sets out a material balance of the chlorofluorocarbons and halons used in the business activity, and identifies the methods used for recovery and reclamation of the chlorofluorocarbons and halons; and

12. This by-law shall come upon the date of passing, except

(1) Section 9, which shall come into force three months after the date of passing;

(2) Sections 2, 3, 7, 8 and 10, which shall come into force twelve months after the date of passing; and

(3) Sections 4, 5 and 6, which shall come into force eighteen months after the date of passing.

13. Any person who fails or neglects to perform any duty imposed in this by-law or who contravenes any provision of this by-law is guilty of an offence and liable to a penalty of not more than $2,000.00 exclusive of costs for each offence.

Arthur C. Eggleton
Mayor

Barbara G. Caplan
City Clerk

Council Chamber,
Toronto, April 6, 1989.
(L.S.)

—

No. 471-89. A By-Law

To amend By-law No. 230-89, respecting
the regulation of chlorofluorocarbons and halons.

(Passed June 29, 1989.)

Whereas the Council of the City passed By-law No. 230-89 on April 6, 1989, respecting the prohibition and regulation of the manufacture, sale, distribution, use and disposal of certain products, material and equipment containing or manufactured with chlorofluorocarbons and halons;

And whereas said By-law contains various provisions which are designated in the by-law to come into force upon the passage of various time periods as set out in the By-law;

And Whereas Council of the City has resolved that it is desirable in the circumstances to amend the By-law to extend the dates on which the various provisions of the By-law shall come into force;

Therefore the Council of the Corporation of the City of Toronto enacts as follows:

1. By-law No. 230-89, being "A By-law to prohibit and regulate the manufacture, sale, distribution, use and disposal of certain products, material and equipment containing or manufactured with chlorofluorocarbons and halons", passed April 6, 1989 is amended as follows:

(1) Section 11 is deleted and the following substituted therefor:

"11. Every employer in the City where the business activity includes the handling and use of chlorofluorocarbons or halons", in furtherance of the business activity, shall

(1) within seven months after the passing of this by-law, register a notice with the Medical Officer of Health identifying the quantity, types and use of chlorofluorocarbons and halons in the business activity;

(2) within eighteen months after the passing of this by-law, conduct and submit and audit to the Medical Officer of Health which sets out a material balance of the chlorofluorocarbons and halons used in the business activity, and identifies the methods used for recovery and reclamation of the chlorofluorocarbons and halons; and

(3) if such business activity is commenced after the eighteen month period referred to in sub-section (2), register the notice required by sub-section (1) and submit the audit required by sub-section (2) to the Medical Officer of Health at the time of commencing operation of the business activity.

(2) Section 12 is deleted and the following substituted therefor:

"12. This by-law shall come into force as follows:

(1) Sections 1 and 9 shall come into force seven months after the date of passing of the by-law;

(2) Sections 2, 3, 7, 8 and 10 shall come into force eighteen months after the date of passing of the by-law; and

(3) Sections 4, 5 and 6 shall come into force twenty-four months after the date of passing of the by-law."

Arthur C. Eggleton
Mayor

Barbara G. Caplan
City Clerk

Council Chamber,
Toronto, June 29, 1989.
(L.S.)

Appendix B

Proposed By-law

The proposed amended by-law would read as follows:

No. By-law

To prohibit and regulate the use recovery and disposal of certain products, material, and equipment containing or manufactured with chlorofluorocarbons and halons.

Whereas the Council of the City is of the opinion that the destruction of the ozone layer of the earth's atmosphere is caused in part by the action of ultra-violet rays on certain synthetic chemicals known as chlorofluorocarbons and halons;

And whereas the depletion of the ozone layer will allow excess ultra-violet rays to reach the earth's surface, which may cause serious irreparable damage to all living tissues;

And whereas such chemicals are found in various manufactured products, material and equipment including such items as certain refrigerators, air-conditioning and cooling systems, and fire extinguishing systems;

Therefore the Council of the Corporation of the City of Toronto enact as follows:

"1. In this By-law,

(a) "City" means the City of Toronto;

(b) "Chlorofluorocarbons" means one or more of the following substances:

Trichlorofluoromethane	(CC13F)	known as CFC 11
Dichlorodifluoromethane	(CC12F2)	known as CFC 12
Trichlorotrifluoroethane	(C2C13F3)	known as CFC 113
Dichlorotetrafluoroethane	(C2F4C12)	known as CFC 114
Chloropentafluoroethane	(C2F5C1)	known as CFC 115

(c) "dispose" means to dispose for the purpose of garbage, refuse, or for destruction, and not for re-use;

(d) "halons" means one or more of the following substances:

difluorobromochloromethane	(CF2BrC1)	known as halon 1211
trifluorobromomethane	(CF3Br)	known as halon 1301
tetrafluorodibromoethane	(C2F4Br2)	known as halon 2402

2. Every person in the City who disposes of any product or equipment that contains chlorofluorocarbons or halons in a form which can be drained or recovered from the product or equipment shall only dispose of such product or equipment.

   (1) by delivering such product or equipment to a recovery site established by the City or authorized by the Council of the City;

   (2) by delivering such items for municipal garbage disposal in accordance with garbage recovery systems established by the City; or

   (3) by ensuring that prior to disposal, the chlorofluorocarbons and halons contained therein are drained and recovered from the product or equipment and thereafter transported intact to a recovery site established or authorized by the City.

3. Notwithstanding Section 4, no person in the City shall dispose or permit the disposal of any vehicular air conditioning unit containing chlorofluorocarbons unless the chlorofluorocarbons are removed and recovered prior to such disposal.

4. No person in the City shall service or repair or permit the servicing or repair of any air conditioner, air conditioning equipment or system including any vehicular air conditioning system, chiller refrigerator, freezer, refrigerating or cooling equipment or system, unless such person ensures that any coolant containing chlorofluorocarbons is not vented to the atmosphere during the servicing of repair process.
5. No person in the City shall test or service any fire extinguisher or fire extinguisher system if such test or servicing causes or could cause the release of halons into the atmosphere.
6. This by-law shall come into force on April 6, 1991.
7. Any person who contravenes any provision of this by-law is guilty of an offence.

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Appendix C

Projected Ontario Phase-Out Highlights For Ozone Depleting Substances

July 1, 1989	ban CFC aerosols and rigid foam packaging made with CFCs.
tentative 1991	establish an infrastructure to collect and recycle CFCs from commercial air conditioners and coolers.
tentative 1991	require that Halons be recaptured and recycled when fire extinguishers are taken out of service.
December 31, 1991	ban use of CFCs as a solvent.
December 31, 1992	require that Halons no longer be vented to the atmosphere during fire extinguisher tests.
December 31, 1993	ban rigid foam insulation and flexible furniture foam made with CFCs (Phase-out complete)
July 1, 1994	end CFC recycling, and require that these substances be captured and destroyed at a destruction facility to be established by this date.
July 1, 1998	ban the use of CFCs in refrigerators, air conditioners and coolers.

Source: Minister Environment Ontario. Ontario Phase-Out of Ozone Depleting Substances. (Factsheet) Toronto. February 1989, with updates from OMOE, 1990.

Appendix D

Projected Prohibited dates by Environment Canada For Various CFC Use Categories

Use Category	% Canadian Use (1987)	Product Group	Projected Prohibition
Aerosol	9	All	End of 1989 except medical and essential safety products.
Rigid Foams	33	a) Insulating foams	
		- polyurethane	1992-1994
		- polystyrene	1990-1991
		- phenolic	1991-1992
		b) Packaging	
		- food	1990
		- other	1990-1991
Flexible Foams	8	Car seats Furniture Cushions, etc.	1990-1992
Refrigeration	36	a) New Refrigeration and Air Conditioning	1994-1999
		b) Existing equipment maintenance	as replacements are available
Solvents	10	electronic	1991-1994
		metal cleaning	1990-1991
		dry cleaning	1991-1992
Others	4	hospital sterilants optical coatings	1990-1994

Source: Minister Environment Canada. Canada to Phase-Out CFCs (Press Release) Ottawa. February 20, 1989, with updates from Environment Canada 1990b).

TABLE 2.1

Implementation Schedule for CFC Regulation: Federal, Provincial and the City of Toronto

CITY OF TORONTO BY-LAW NO. 230-89		ONTARIO ENVIRONMENTAL PROTECTION ACT (EPA)		CANADIAN ENVIRONMENTAL PROTECTION ACT (CEPA)	
Section of By-Law	Eff Date(s)	Regulation	Eff Date(s)	Regulation	Eff Date(s)
Database Development 11. Registration, audit requirement (users and handlers of CFCs)	In effect	Reg 309 (generators and transporters)	In effect	Paragraph 18(1), CEPA (producers, importers, major users)	In effect
Production Controls None		None		"Ozone Depleting Substances" Regs: No. 1 -- CFCs, 50% 1986 levels No. 2 -- Halon levels frozen	In effect pending
Manufacturing/Sales Prohibitions General manufacturing ban, unless: 2. -no substitutes avail., recovery system available, audit done 3. -equipment does not leak	06-10-90 06-10-90	No general ban: specific product types covered by specific regs (see below)		As with Province, specific product types covered by specific regs (see below)	
7. Rigid foam insulation ban	06-10-90	Foam insulation regs in development	01-10-90(p) (phase-out by Dec'93)	Foam insulation regs in development	1991-94 (p)
8. Aerosol ban (except for medical uses)	06-10-90	Reg 394/89 prohibits aerosols (with some exceptions, sell-through time)	In effect	"Ozone Depleting Subst." Reg. No. 3: - aerosols except for medical uses	Fall '91(p) Fall '91(p)
10. Foam packaging ban	06-10-90	Reg 394/89 prohibits certain kinds of foam packaging	In effect	- food packaging - hand-held fire extinguishers - certain important commercial uses	Fall '91(p) pending 01-01-93
		Flexible furniture foam ban	31-12-93(p)	Flexible foams	1991-1992
		Prohibit use of CFCs as solvents	31-12-91(p)	Solvents and other uses	1991-1994

TABLE 2.1 ...cont'd

Implementation Schedule for CFC Regulation: Federal, Provincial and the City of Toronto

CITY OF TORONTO BY-LAW NO. 230-89		ONTARIO ENVIRONMENTAL PROTECTION ACT (EPA)		CANADIAN ENVIRONMENTAL PROTECTION ACT (CEPA)	
Section of By-Law	Eff Date(a)	Regulation	Eff Date(a)	Regulation	Eff Date(a)
Emission Controls					
6 Prohibition on venting of CFCs to atmosphere while servicing air conditioners, coolers, etc.	06-04-91	Prohibition on venting of CFCs to atmosphere while servicing mobile air conditioners, coolers, etc.	01-07-91(p)	None	
9. Prohibition on venting of halons to atmosphere during testing of fire extinguishers	In effect	Prohibition of venting of halons to atmosphere during testing of fire extinguishers	31-12-92(p)	None	
Disposal, Recovery and Recycling					
4. Proper disposal of products and equipment containing CFCs: via City system or w/ prior recovery of CFCs	06-04-91	No regulations proposed; establishment of recycling infrastructure still at discussion stage		None	
5. CFC recovery prior to disposal of car air conditioners	06-04-91				
6. Prohibition on venting of CFCs to atmosphere during servicing of refrigeration units	06-04-91				
Long-Term Substitutions Required					
		Ban on CFCs in refrigeration	01-07-98	Substitutes for CFCs in refrigeration and air conditioning	1994-1999

(a) In Effective Date column, "pending" means that the regulations have been made public, but will only be promulgated after an official period of time for comments has passed (60 days); "(p)" after a date signifies that the date is projected only, and that no actual regulation has been made public.

Council Action - October 1 & 2, 1990

During consideration of this Clause, Council also had before it a report (September 27, 1990) from the City Solicitor. (Communication 39 attached)

Council amended this Clause by adding at the end thereof the following:

"It is also recommended that:

1. the City Solicitor, in consultation with Councillor O'Donohue and the Medical Officer of Health, report further on including in the by-law, 'methylchloroform' and 'methyltetrachloride'; and
2. the report (September 27, 1990) from the City Solicitor be adopted."

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39

CITY OF TORONTO
LEGAL DEPARTMENT

Re. Exec. Rpt 22 Cl 31

A.M. Gordon

September 27, 1990

To: City Council

Subject: CFC BY-LAW

Origin: Clause 31, City of Toronto Executive Committee Report No. 22 (c06cncl90016:627)

Recommendations:

That Clause 31 of Executive Committee Report No. 22 be amended by deleting Recommendation No. 1 and substituting therefor the following:

"1. That By-law No. 230-89 as amended, be repealed and replaced with the draft by-law attached to the September 27, 1990 report of the City Solicitor, and that such draft by-law be approved and authority be granted for the introduction of the necessary bill in Council to implement the draft by-law, and that City Council approve the establishment by the Medical Officer of Health of temporary personnel positions to implement and enforce the by-law, as described in the September 12, 1990 report from the Medical Officer of Health and City Solicitor."

Comments:

Clause 31 of Executive Committee Report No. 22 contains the September 12, 1990 report of the Medical Officer of Health and City Solicitor respecting amendments to the CFC By-law, being By-law No. 230-89 as amended. The Committee amended and recommended the adoption of the recommendations of the report. I have prepared a draft by-law which repeals By-law No. 230-89 as amended, and replaces it with a new by-law generally in the form of that contained in Appendix B of the September 12, 1990 report. In this fashion, By-law No. 230-89 will not be amended, as recommended in Recommendation No. 1 of the September 12, 1990 report, but will be replaced by a new by-law which will, with the exception of the definition and penalty sections, come into force in April, 1991, as recommended by the Medical Officer of Health.

City Solicitor
AMG/ss

DRAFT BY-LAW

No. A By-law

Respecting the prohibition and regulation of the use, recovery and disposal of certain products, material, and equipment containing or manufactured with chlorofluorocarbons and halons.

Whereas by amendment and adoption of Clause 31 contained in City of Toronto Executive Committee Report No. 22, it is recommended that By-law No. 230-89 be repealed and replaced, respecting chlorofluorocarbons and halons;

And whereas the Council of the City is of the opinion that the destruction of the ozone layer of the earth's atmosphere is caused in part by the action of ultra-violet rays on certain synthetic chemicals known as chlorofluorocarbons and halons;

And whereas the depletion of the ozone layer will allow excess ultra-violet rays to reach the earth's surface, which may cause serious irreparable damage to all living tissues;

And whereas such chemicals are found in various manufactured products, material and equipment including such items as certain refrigerators, air-conditioning and cooling systems, and fire extinguishing systems;

Therefore the Council of the Corporation of the City of Toronto enact as follows:

"1. In this By-law,

(a) "City" means the City of Toronto;

(b) "Chlorofluorocarbons" means one or more of the following substances:

Trichlorofluoromethane	(CCl_3F)	known as CFC 11
Dichlorodifluoromethane	(CCl_2F_2)	known as CFC 12
Trichlorotrifluoroethane	($C_2Cl_3F_3$)	known as CFC 113
Dichlorotetrafluoroethane	($C_2F_4Cl_2$)	known as CFC 114
Chloropentafluoroethane	(C_2F_5Cl)	known as CFC 115

(c) "dispose" means to dispose for the purpose of garbage, refuse, or for destruction, and not for re-use;

(d) "halons" means one or more of the following substances:

difluorobromochloromethane	(CF2BrCl)	known as halon 1211
trifluorobromomethane	(CF3Br)	known as halon 1301
tetrafluorodibromoethane	(C2F4Br2)	known as halon 2402

2. Every person in the City who disposes of any product or equipment that contains chlorofluorocarbons or halons in a form which can be drained or recovered from the product or equipment shall only dispose of such product or equipment.

   (1) by delivering such product or equipment to a recovery site established by the City or authorized by the Council of the City;

   (2) by delivering such items for municipal garbage disposal in accordance with garbage recovery systems established by the City; or

   (3) by ensuring that prior to disposal, the chlorofluorocarbons and halons contained therein are drained and recovered from the product or equipment and thereafter transported intact to a recovery site established or authorized by the City.

3. Notwithstanding Section 2, no person in the City shall dispose or permit the disposal of any vehicular air conditioning unit containing chlorofluorocarbons unless the chlorofluorocarbons are removed and recovered prior to such disposal.

4. No person in the City shall service or repair or permit the servicing or repair of any air conditioner, air conditioning equipment or system including any vehicular air conditioning system, chiller refrigerator, freezer, refrigerating or cooling equipment or system, unless such person ensures that any coolant containing chlorofluorocarbons is not vented to the atmosphere during the servicing of repair process.

5. No person in the City shall test or service any fire extinguisher or fire extinguisher system if such test or servicing causes or could cause the release of halons into the atmosphere.

6. This by-law shall come into force upon the date of passing, except Sections 2, 3, 4, and 5, which shall come into force on April 6, 1991.

7. Any person who contravenes any provision of Sections 2, 3, 4, or 5 of this By-law is guilty of an offence.

8. By-law No. 230-89, being "A By-law to prohibit and regulate the manufacture, use, distribution, recovery and disposal of certain products, material, and equipment containing or manufactured with chlorofluorocarbons and halons," and By-law No. 471-89, being "A By-law to amend By-Law No. 230-89, respecting the regulation of chlorofluorocarbons and halons", are hereby repealed.

3.1

CITY OF TORONTO
DEPARTMENT OF PUBLIC WORKS

Note: Proposal passed by
Council on June 29/90.

April 27, 1990.

To: City Services Committee

Subject: Water Conservation

Origin: Your Committee, at its meeting of January 12, 1990, in considering a communication dated November 30, 1989 from the Metropolitan Toronto Clerk regarding a study of development charges for construction of trunk relief sewers and a letter dated January 11, 1990 from Councillor Marilyn Churley regarding water conservation, requested that I report to your Committee on the costs and strategies for implementing a water conservation programme to reduce water use and waste water in the City of Toronto (c39csc90132:50)

Recommendations:

1. That a policy of Universal Water Metering be adopted that provides for:

   (a) mandatory metering of all new buildings and all buildings where the water service, within the street allowance or on private property, or the water piping in the basement is being replaced;

   (b) a free of charge programme to retrofit existing residential buildings with water meters on the basis of public co-operation;

2. That the proposed Water Conservation Programme set out in this report be approved and the Commissioner of Public Works, in consultation with the Commissioner of Finance, as appropriate, be requested to:

   (a) Develop and implement a Water Conservation Education and Public Relations Programme,

   (b) Introduce water conservation conditions on new major developments in the City of Toronto,

   (c) Report to your Committee on Water Audit procedures and criteria for commercial consumers,

   (d) Continue the City's watermain leak detection programme,

(e) Review all cost-related water distribution and sewage collection charges to ensure that these costs are properly charged to the Water Rate,

(f) Report further to your Committee on a Rebate Programme for first time installation of water efficient plumbing fixtures, and

(g) Develop and implement a Water Conservation Kit Distribution Programme;

3. That funds in the amount of $200,000.00 be provided from the Water Revenue Account to commence this year the installation of water meters in all new buildings and initiate the Water Conservation Programme;

4. That funds in the amount of $1,700,000.00 (1990 dollars) be included in my 1991 Operating Budget for the Universal Water **Metering Programme and the Water Conservation Programme;**

5. That the Commissioner of Finance be requested to report, in consultation with the Executive Director of Management Services and the Commissioner of Public Works, on the introduction of an Automated Water Meter Reading System and on the additional resources and funds required for meter reading as the result of Universal Water Metering;

6. That the Commissioner of Finance and the Commissioner of Public Works be requested to report, by September, 1990, on the impact of the Water Conservation Programme, the Universal Water Metering Programme, and the Water Service Replacement Programme on the Water Rate;

7. That the Canadian Standards Association be requested to amend their standards for water using plumbing fixtures and include criteria which control the water efficiency of such plumbing fixtures;

8. That the Honourable John Sweeney, Minister of Housing and Municipal Affairs, Province of Ontario, be requested to amend the Plumbing Code and include criteria which control the water efficiency of plumbing fixtures;

9. That the Council of the Municipality of Metropolitan Toronto be requested to support the City's water conservation efforts and contribute to the programme at a rate of 50 percent;

10. That the City Solicitor be requested to report, concurrently with the report referred in to Recommendation No. 6 above, in consultation with the Commissioner of Finance and the

Commissioner of Public Works, on any necessary amendments to By-law No. 102-67 as amended, respecting Water Works and Rates;

11. That the appropriate City officials be authorized to take whatever action is necessary to implement the foregoing.

Comments:

I am pleased to submit to your Committee the enclosed report on Water Conservation. The report deals with the implementation of a Universal Water Metering Programme, as well as a Water Conservation Programme.

City Council, at its meeting of January 12, 1989, in considering the Commissioner of Public Works' Progress Report No. 4 on the City of Toronto Water Distribution System, requested that the Commissioner of Public Works and the Commissioner of Finance report on the implementation of a policy of full metering. I have consulted the Commissioner of Finance on the proposed Universal Water Metering Programme contained in my report and he has verbally advised that he is in agreement.

I have also consulted the Commissioner of Finance on the Water Conservation Programme contained in my report and have not yet received any comments in this respect.

The City Solicitor has advised that he has no comments on the enclosed Water Conservation Report.

____DJ
WW

Commissioner.

Attachment

CITY OF TORONTO
DEPARTMENT OF PUBLIC WORKS
WATER CONSERVATION REPORT

CONTENTS:

1. Introduction

2. Water Conservation Programme

   2.1 Policy of Universal Water Metering

   2.2 Water Conservation Programme for New Development

   2.3 Water Audit for Commercial Consumers

   2.4 Education and Public Relations Programme

   2.5 Watermain Leak Detection

   2.6 Water Rate Charges

   2.7 Water Efficient Plumbing Fixtures

      2.7.1 Rebate Programme

      2.7.2 Water Conservation Kit

   2.8 Organizational and Financial Requirements

      2.8.1 Requirements to Implement Universal Water Metering

      2.8.2 Requirements for the Water Conservation Programme

      2.8.3 Impact on the Water Budget

N. Vardin, P.Eng.,
City Engineer and Commissioner of
Public Works

APRIL, 1990

1. INTRODUCTION

The principal benefits of water conservation are:

- Preservation of water resources.
- Savings in capital and operating expenditures due to reduction in the sizing of treatment, distribution and collection facilities for water and sewage.
- Savings in capital and operating expenditures due to elimination or postponement of expansions to treatment, distribution, and collection facilities for water and wastewater.
- Conservation of energy used in the treatment and distribution of water, in the collection and treatment of wastewater, and in the wasteful use of heated water.
- Reduction in the use of chemicals for the treatment of drinking water and sewage (chlorine, alum precipitate, fluoride, precipitates for phosphorus removal, etc.).

Water conservation measures initiated in Toronto in the past have been short-term efforts in times of water shortages, or when water treatment or storage facilities were at capacity. These conservation measures, such as reduced lawn watering or reduced indoor water use during peak periods, were voluntary reductions brought about through extensive media coverage and repeated requests by various politicians and municipal representatives. Water use would rise again after the crisis was over.

Long term water conservation strategies and technologies have mainly been developed in areas where water resources are scarce, e.g. in the Canadian prairie provinces and in the southern and western states of the U.S., such as Arizona, California, etc. A few Ontario municipalities, such as the Regional Municipality of Waterloo, who rely on wells with very limited surface water supply, have also embarked on water conservation programmes to preserve water resources and eliminate or postpone the construction or enlargement of additional treatment and/or conveyance facilities.

Metropolitan Toronto, including the City of Toronto, are fortunate in that an ample supply of good quality drinking water is available from Lake Ontario and that water treatment facilities and water distribution networks have been designed and maintained to ensure a secure water supply, even in the face of rapid development taking place in the Metropolitan Region. Surely, water preservation is not a significant factor in the case of Toronto.

However, eliminating or postponing the need for expansion of sewage collection and treatment facilities has become a major issue for the entire Metropolitan Region. Major development projects distributed throughout all area municipalities have created the need for the construction of major trunk sewer relief works, currently estimated by the Metropolitan Toronto Commissioner of Works at approximately $250 million. Major expansions are also needed to the sewage treatment plants to cope with this additional sewage flow.

In addition, the conservation of energy, including the wasteful use of heated water, has become a major concern. Agencies involved in providing energy to the public, such as Ontario Hydro and Consumers Gas, both have programmes to promote saving energy, including reducing the waste of heated water. In summary, a programme of water conservation will provide economic benefits and add to environmental protection.

2. WATER CONSERVATION PROGRAMME

The water conservation programme I propose is based on two basic principles:

(a) Implementing a number of water saving strategies; and

(b) Promoting the use of water efficient plumbing fixtures to domestic and commercial customers.

Details of the programme are described below:

①

2.1 Policy of Universal Water Metering

There is no doubt that water is one of the cheapest commodities available to us - a litre of municipal water in the City of Toronto costs just 0.06 cents; 16.5 litres (4 Imperial gallons) costs just 1 cent.

The low price for water is one of the factors permitting high water consumption in Canada in general, and in Toronto in particular. The average consumption per capita per day in Toronto amounts to 786 litres (173.0 Imperial gallons) (includes all uses - domestic, industrial, commercial, etc.). Clearly, if water conservation is to be promoted, then it is important that each customer is charged in accordance with actual consumption.

In the City of Toronto, commercial and industrial buildings, as well as residential buildings with more than four units, are metered. Residential buildings with less than four units are generally charged on a flat rate basis in accordance with the number of rooms and fixtures installed in the building, unless either the property owner has specifically applied to the City Treasurer for a water meter to be installed, or the City Treasurer has directed the installation of a water meter.

Metered accounts (commerical, industrial and domestic) currently represent approximately 20 percent and produce 73 percent of the total water revenue. In total, the City of Toronto has approximately 25,000 metered accounts (3,000 of which are high consumers), and approximately 104,000 flat rate accounts, for a total of approximately 129,000 accounts. ②

The estimated average cost to retrofit existing buildings with a water meter is $350.00. This estimate includes supply and installation of the meter, as well as the cost to adjust plumbing pipes and minor repairs to finished basements. Hence, the total cost of installing meters in all unmetered premises is approximately $37 million (1990 dollars). ③

Clearly, this is a high price to pay and, at first glance, it might appear that, from an economic point of view, implementing full metering may not be a supportable proposition. The relative economics are changing, however, if cost benefit calculations take into account the effect of projected reductions in the cost of capital expansions and operation of Metropolitan Toronto's water treatment plants and sewage treatment plants.

The Canadian Water and Wastewater Association, in which my Department holds membership, has engaged the firm of James F. Hickling, Management Consultants Limited, to develop an economic model to analyze the range of cost and the benefits of introducing universal water metering, taking into account cost of meter installation, meter maintenance, meter reading, predicted reductions in water consumption, and savings in the cost of operating water distribution and treatment facilities, as well as sewage collection and treatment facilities, and the future capital requirements for the expansion of these facilities. Universal metering for the City of Toronto was analyzed using this model for three scenarios, assuming different rates of reduction in water demand due to full metering. The analysis confirms that, in all three cases, the economic benefits of universal metering outweigh the cost (capital, operating, consumer surplus). Under the most conservative scenario, it was assumed that full metering would reduce the "discretionary residential water demand" by 9 percent, while the demand for other uses remains unchanged. Residential discretionary water demand includes such uses as lawn watering, car washing, and laundry washing, while non-discretionary uses include toilet flushing and food preparation. Even though the 15 percent reduction in residential discretionary water demand represents a reduction of less than 1 percent in the overall City of Toronto water demand, the cost benefit calculation showed that there would be an overall net cost saving of approximately $800,000.00 over a ten year period due to reduced energy consumption and reduced demand on water and sewage facilities.

It must be recognized that, initially the City would bear most of the cost of implementing universal metering, while Metro would receive the benefits. However, in the long term, a reduction in water consumption and sewage flow will reduce water rates and water pollution control rates charged by Metro and, consequently, the City would benefit in accordance with its apportioned water consumption within Metro. In this connection, it should be noted that all other area municipalities within Metropolitan Toronto are already fully metered, with the exception of Etobicoke where approximately 3 percent of the accounts are still on a flat rate basis.

On the basis of cost benefit considerations, and taking into account the other advantages of water conservation as described above, I recommend that the City of Toronto should now adopt a policy of universal water metering.

The implementation of universal metering will require the full co-operation of our citizens and, therefore, the approach for the implementation must be carefully considered to ensure that any adverse side effects are minimized.

In some buildings, where the water service enters the front basement wall, the water pipe is exposed and of good condition, it will be relatively simple to install a water meter. In other buildings, the installation of a water meter will be expensive and disruptive to the residence because the water service may not enter at the front wall, it may be buried under the basement slab, the exact location of the incoming service may not be known, the internal piping may be concealed in walls or ceilings, the internal piping may be of poor condition, or the basement may be finished, making it difficult to access the piping and provide a suitable location for the water meter.

While public support for conservation and recycling efforts, as well as for environmental protection, has increased dramatically in recent years, it is also true that public concern over rising taxes and utility charges is growing. It is interesting to note that, in 1989, the civic administration for the City of Calgary proposed to implement Universal (mandatory) water metering to its Council. The Council of the

City of Calgary decided to conduct a plebiscite on this matter which was carried out as part of its October 16, 1989 municipal elections. Even though information material provided to the citizens in support of universal water metering showed that there would be, in the long term, savings as a result of universal metering, the proposal was defeated at the ballot with the majority of the population opposed to the implementation of universal water metering.

Taking into account cost benefit considerations, practicalities, and difficulties to retrofit existing dwellings with water meters, I propose the following plan:

I. Mandatory Water Metering for All New Construction and Buildings Where the Water Service Pipe or the Basement Water Piping is Being Replaced

This may require an amendment to By-law No. 102-67, as amended, respecting Water Works and Rates, in that all new buildings and all buildings where the water service, within the street allowance or on private property, or the water piping in the basement are replaced be required to install a water meter. As under existing policy, the homeowner's plumber must provide for a horizontal spacer in the service pipe, while the City supplies and installs the meter. In the case of water service replacement within the public road allowance, the City will undertake the adjustment to the plumbing and provide a grant of up to $250.00 for alterations, if required, in order to expose concealed water pipes and for the repair of finished basements if same are affected by the installation.

I estimate that, annually, an additional 2,000 water meters, at a total cost of $540,000.00, will be installed under this programme.

II. Meter Retrofitting for Existing Buildings

Considering that 73 percent of the total water revenue generated is already from metered accounts, and considering the difficulties of installing water meters into existing dwellings, I propose that the retrofitting of existing buildings with water meters be implemented on the basis of public co-operation. In order to encourage public co-operation in this regard, I propose the following actions:

(a) Provide the installation of water meters for existing dwellings at no charge to the property owner, including adjustments to plumbing and a grant of up to $250.00 for alterations, if required in order to expose concealed water pipes and for repairs to finished basements, if same are affected by the installation.

(b) Initiate a public information/education campaign promoting full metering and its benefits, e.g.:

- Savings in water charges
- Benefits of User-Pay principle
- Contribution to water conservation and environmental protection.

(c) Eliminate meter rental charges. Presently, in accordance with By-law No. 102-67, as amended, metered premises are charged a meter rental charge in accordance with the size of the meter. In 1988, the total water revenue was $73,734,800.00 (100 percent), while total charges for meter rentals were $627,065.00 (less than 1 percent). It is clear that revenues obtained from meter rental charges are minor and I propose that these charges be eliminated and the cost thereof be incorporated into the general Water Rate. The elimination of meter rental charges will remove a deterrent for property owners who wish to consider the installation of a water meter.

It is difficult to estimate the number of water meters to be installed under the retrofit programme. Public participation will largely depend on the information provided on economic benefits, environmental benefits, and the grant programme. I expect, initially, good participation as small family households will significantly benefit from metering and could be expected to volunteer readily. In later years when participation may drop, more aggressive public relations/advertising could be considered. In addition, adjustment to the flat water rate charges could be considered in the future. In New York City, for example, a 10 year programme to introduce universal metering is presently underway. While the programme is voluntary, homeowners have to make the choice of having a water meter installed or accepting a 50 percent increase in their flat rate water charges.

Considering the required organizational and financial resources, I estimate that approximately 2,000 water meters could be installed under the retrofit programme annually. This would amount to $700,000.00 annually and would complete the programme in approximately 25 years.

2.2 Water Conservation Programmes for New Major Developments

4

I propose to introduce water conservation conditions on new major developments in the City of Toronto. As part of the Rezoning/Redevelopment Review Process, all major development projects will be required to include water conservation strategies as follows:

(a) Submit a report, prior to the issuance of a building permit or the introduction of a Bill in Council, on a water conservation plan, satisfactory to the Commissioner of Public Works.

(b) Design and construct the project in accordance with the water conservation report approved by the Commissioner of Public Works.

The report required of the owner will include the following:

(a) An inventory of all water and sewage related piping, equipment, fixtures, and appliances.

(b) A water audit including consumption rates and expected volume of water consumption.

(c) A description of the policies, programmes, processes, and equipment which will be put in place to conserve water.

The foregoing conditions will be secured in collateral agreements as part of the Rezoning/Redevelopment Review Process.

2.3 Water Audits for Commercial Consumers

5

In the City of Toronto, approximately 63 percent of the water consumption is by large commercial/industrial water consumers using 1 million Imperial gallons a year or more (approximately 3,400 accounts). The potential for water conservation is, therefore, greatest with large water consumers.

I propose, therefore, that my Department develop a programme of providing a Water Audit to consumers, free of charge. Under this programme, the City would investigate the water requirements of large consumers and provide recommendations to the consumer on how to reduce water consumption, including cost estimates for potential savings.

2.4 Education and Public Relations

The success of any water conservation efforts will depend on public participation and co-operation. I, therefore, propose that the City initiate a programme to provide educational material to schools on water conservation measures and launch a public relations campaign on water conservation in connection with the campaign to introduce universal water metering, as described under Item 2.1.

⑥

The campaign will promote the installation of water meters, use of water efficient plumbing fixtures, give information on how to reduce water use for lawn watering and gardening, and on the importance of repairing leaking water pipes and fixtures. Emphasis will also be put on the environmental and economic benefits of water conservation.

2.5 Watermain Leak Detection

As part of my ongoing watermain maintenance programme, a leak detection programme is carried out by my Department to reduce water lost through leaking watermains. This programme was initiated in 1968 and, since then, the entire distribution system has been covered. From 1968 to 1984, the leak detection programme was undertaken by consultants. Since then, I have developed the expertise in-house and a three person leak detection crew is now permanently assigned to this task. The leak detection programme is proceeding successfully and no changes to the programme are necessary at this time.

⑦

2.6 Water Rate Charges

As indicated earlier in connection with the metering policy, the price of municipal water in Toronto is relatively low.

Examples of costs charged by water utilities in other parts of the world for 1,000 Imperial gallons (4540 litres) are as follows:

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	Cost in Canadian $ Per 1,000 Imperial Gallons		
Location	Water Treatment & Distribution	Sewage Colllection & Treatment	Total To Consumer
City of Toronto	1.20	1.55	2.75
New York City, U.S.	1.81	2.02	3.83

Boston, Mass., U.S. (Range)	2.87 to 2.93	3.56 to 3.93	6.43 to 6.86
Houston, Texas, U.S.			
. Residential - Less Than 12,000 Gallons/Month	3.06	3.71	6.77
. Residential - Above 12,000 Gallons/Month	5.57	3.71	9.28
. Commercial	2.86	4.97	7.83
Munich, West Germany	4.14	5.16	9.30
Bottled Water (Toronto, Trademark-Echo Springs, $7.35 per 4.0 Imperial Gallon Container)	1,837.50	N/A	1,837.50

In order to promote water conservation, it is important that the price of water covers all costs for retrieving, treating, and distributing drinking water, as well as collecting and treating sewage, and that none of these costs are charged to the General Tax Rate.

The price structure for water in Toronto is already based on the principle of recovering all costs associated with drinking water and sewage through water rates. The 1990 water price for Toronto will be comprised of the following components:

	Price Per 1,000 Gallons
Metro's Price for Retrieving, Treating and Delivering Water to Area Municipalities	$ 0.677
Metro's Surcharge for Pollution Control	$ 1.1373
Metro's Sale Price to Area Municipalities	$ 1.8143
City of Toronto Charge for Distribution of Water to Consumers	$ 0.5232

City of Toronto Sewage Service Rate Surcharge to Cover Cost For Maintenance of Sewer System	$ 0.4125
Price to Consumers *	$ 2.75

* A 4% discount, reducing the gross price from $2.75 to $2.64, is allowed providing payment of the water bill is made within one (1) calendar month of the date the charges become due.

I intend to review, in consultation with the Commissioner of Finance and City Treasurer, all costs associated with the distribution of water and the collection of sewage, in order to ensure that these costs are indeed properly charged to the Water Rate and not to the Tax Rate.

Water conservation may be further promoted by restructuring water rates with increasing block rates, where the price of water increases as the quantity of use increases, or by a monthly peak demand pricing structure which is a surcharge levied for water use exceeding a baseline amount.

Studies that have looked at price rate restructuring in other municipalities in North America indicate conflicting results on the effectiveness of the price structure of water rates. Some indicate a price elasticity which shows that for every 10 percent increase in water rates, there could be a corresponding 2.6 percent decrease in inside water use and 4 percent decrease in outdoor water use.

There are concerns that increased water rates will reduce water use only for a short time before per capita use increases again. As the water source in Toronto is not a problem, it may be hard to obtain public acceptance, especially if increased rates are for conservation purposes that do not reflect increased system costs.

I have consulted with the Commissioner of Finance and it was agreed that the restructuring of water rate charges is not advisable at this time.

2.7 Water Efficient Plumbing Fixtures

For some time now, water efficient plumbing fixtures are commercially available, which will effectively reduce the volume of water used by homeowners, e.g.:

(a) Water Efficient Water Closets

Conventional water closets account for approximately 45 percent of the residential indoor water consumption. Clearly, the greatest potential for water conservation in residential dwellings is by reducing water used for flushing toilets. New water efficient water closets use less than 50 percent of conventional water closets.

The expense of replacing an existing water closet is significant (approximately $800.00). An alternative to installing new water closets is the installation of toilet dams into the tank of existing water closets. Toilet dams, at a price of less than $5.00, will reduce water consumption by approximately 50 percent.

(b) Water Efficient Showerheads

Water efficient showerheads use up to 50 percent less water than conventional showerheads. Because of the reduction in the use of heated water, these devices also save energy. Generally, the cost for new showerheads ranges between $20.00 and $100.00.

(c) Water Efficient Basin and Sink Faucets

The primary waste of water from faucets occurs when the faucet is running continuously. The greatest potential for water saving at basins and sinks is, therefore, by reducing the length of time the water is running, e.g. by turning off the water after wetting the toothbrush. In addition, some savings can be achieved by reducing the rate of flow from the faucet. This can be achieved by installing new water efficient basin and sink faucets or by installing a flow restrictor into the existing faucet.

Water efficient faucets generally provide a flow rate of approximately 10 litres per minute (2.3 Imperial gallons per minute). Before replacing an existing faucet with a new water efficient faucet or before installing a flow restrictor, a flow test at the existing faucet should be conducted as the flow from many existing faucets is already restricted due to old plumbing, partly obstructed nozzles, etc.

While water efficient plumbing fixtures are now commercially available, under the existing Ontario Plumbing Code, there is no requirement to install these, nor do local municipalities have the power to legislate mandatory installation of water efficient plumbing fixtures. Clearly, the most effective approach to promoting the use of water efficient plumbing fixtures would be by specifying, in the Ontario Plumbing Code, maximum flow criteria for basic plumbing fixtures.

I have been advised by staff of the Ministry of Housing and Municipal Affairs that C.S.A. Standards, which are referenced in the Plumbing Code, need to be amended before the Plumbing Code can be changed to include criteria which would control the water efficiency of water using plumbing fixtures. I, therefore, recommend that the Canadian Standards Association be requested to amend their standards for water using plumbing fixtures and that the Honourable John Sweeney, Provincial Minister of Housing and Municipal Affairs, be requested to amend the Plumbing Code to include criteria which control the water efficiency of water using plumbing fixtures.

In the meantime, I propose a programme for the City of Toronto which will promote the installation of water efficient plumbing fixtures and which will address new building construction, renovations, and the retrofitting of existing plumbing fixtures.

2.7.1 Rebate Programme

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With respect to the (first time) installation of water efficient fixtures, I propose a Rebate Programme, whereby any owner of a premises will receive a rebate from the City upon completed (first time) installation of such fixtures.

The rebate rates will be structured on the basis that the owner of a typical residential dwelling would receive a rebate of $100.00 if all fixtures installed are of the water efficient type. The maximum rebate amount for any one premises will be limited to $500.00. For illustration purposes, the following approximate rebate rates are given:

- Water efficient water closet: $30.00
- Water efficient showerheads: $12.00
- Water efficient faucets: $5.00

I will report separately to your Committee on recommended rebate rates for water efficient fixtures once I have assembled a Water Efficient Fixtures Catalogue which contains the types and trademarks of fixtures accepted as being water efficient and eligible for a rebate. Considering the rate of building construction and renovation in Toronto, I propose that, annually, $125,000.00 be made available for the Rebate Programme.

2.7.2 Water Conservation Kit

With respect to the retrofitting of existing plumbing fixtures, I propose that property owners be offered, free of charge, a water conservation kit containing the following:

- Information on water conservation with emphasis on economic and environmental benefits of water conservation.
- Toilet dams for installation into the tank of existing water closets. Toilet dams will reduce water consumption by approximately 50 percent.
- Faucet flow restrictors (several) for installation into existing basin and sink faucets.

I recommend that, annually, a budget of $80,000.00 be provided for the purchase and distribution of water conservation kits. The estimated cost for one water conservation kit is $3.20, therefore, 25,000 water conservation kits will be available for distribution annually.

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2.8 Organizational and Financial Requirements

2.8.1 Requirements to Implement Universal Water Metering

As described under Chapter 2.1, I anticipate that, annually, approximately 800 additional water meters will have to be installed in the course of new construction and major renovations, and in the order of 3,200 additional meters will be installed under the voluntary water meter retrofit programme for existing buildings. The total cost of installing these additional meters is estimated to be $1,240,000.00 annually.

The cost to maintain and provide for a sinking fund for the eventual replacement of one 5/8-inch diameter water meter is approximately $20.00 annually. The cost to maintain 4,000 water meters is, therefore, approximately $80,000.00 annually. This cost will compound each year as additional meters are added to the meters which are already installed.

The installation of water meters will continue to be carried out by my staff. Two additional meter installers will be required to handle the additional work.

The retrofitting of existing buildings with meters will require adjustments to the internal plumbing and the installation of a horizontal spacer. This work will be carried out by private contractor. Two additional inspectors will be required to co-ordinate and inspect the contractor's work. In addition, two clerks will be required to handle applications and contract payments. The cost for the additional staff is included in the cost estimates for the meter installation.

The Commissioner of Finance has advised that the introduction of universal metering cannot be accommodated by the existing complement of water meter reading inspectors. The Commissioner of Finance, in consultation with staff of the Management Services Department and my Department, is in the process of reviewing automated meter reading technologies. These systems have made great progress in recent years and could provide City wide water meter reading without significant increase in costs and staff. The Commissioner of Finance has advised that a separate report on the introduction of automated meter reading and the resources required by the Commissioner of Finance to accommodate Universal Water Metering will be submitted to your Committee at a later time.

2.8.2 Requirements for the Water Conservation Programme

In order to implement the water conservation measures proposed in this report, it will be necessary to establish at an early date the permanent position of Water Conservation Co-ordinator. The Water Conservation Co-ordinator, with support from existing staff in my Department, will be responsible to initiate and implement the education and public relations campaign, review water conservation reports from new major developments, implement and co-ordinate the rebate programme for water efficient plumbing fixtures, and co-ordinate the distribution of the water conservation kit to existing residences.

The Water Conservation Co-ordinator will also develop water audit procedures and criteria for commercial and industrial customers. Additional in-house staff resources or outside consultants may be required for water audit services. I will report separately to your Committee on the water audit services at a later time.

The estimated annual cost to implement the water conservation programme is as follows (1990 dollars):

Water Conservation Co-ordinator (Including Overhead)	$ 75,000.00
Education and Public Relations Campaign	$ 100,000.00
Rebate Programme	$ 125,000.00
Water Conservation Kits	$ 80,000.00
Additional Temporary Staff or Consultant Assistance	$ 50,000.00
Water Audit	$ 30,000.00
TOTAL -	$ 460,000.00

The water conservation programme I propose will also be of benefit to the Metropolitan Toronto Corporation, because it effectively reduces the demands on Metro's water and sewage distribution, conveyance and treatment facilities. I consider it appropriate, therefore, to request the Metropolitan Toronto Corporation to contribute towards the cost of the City's water conservation programme at the rate of 50 percent.

2.8.3 Impact on the Water Budget

The total annual cost is:

Implementing Universal Water Metering (excluding cost for additional meter reading and meter maintenance):	$ 1,240,000.00
Water Conservation Programme:	$ 460,000.00
TOTAL : (1990 Dollars)	$ 1,700,000.00

For the current year, I recommend that funds in the amount of $50,000.00 be provided for the installation of water meters in new buildings and in the course of major renovations, and that an amount of $150,000.00 be provided to initiate the water conservation programme. The Commissioner of Finance has advised that funds in the amount of $200,000.00 for this purpose can be made available from the Water Revenue Account.

I propose that, in the 1991 Budget, sufficient funds be allocated to commence the entire universal water metering programme and the water conservation programme.

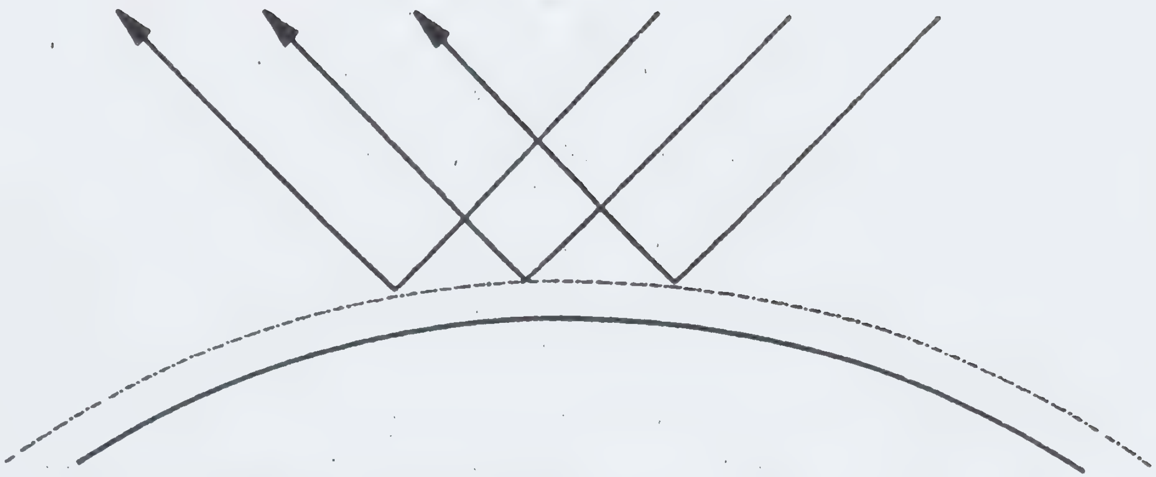
Total 1989 water revenues amounted to $81,842,714.00, hence funds for the implementation of Universal Metering amount to 1.5 percent of total water revenues and funds for water conservation efforts amount to 0.5 percent of total water revenues.

I have, under separate cover, submitted to your Committee a report on a Water Service Replacement Programme which will also have a significant impact on water rates. I, therefore, recommend that the Commissioner of Finance and the Commissioner of Public Works be requested to report, by September, 1990, to your Committee on the impact of the Water Conservation Programme, the Universal Water Metering Programme, and the Water Service Replacement Programme on the Water Rate.

DJ
WW

Commissioner.

3.2



CHLOROFLUOROCARBON AND HALON

TASK FORCE REPORT

CITY OF WINNIPEG

"A REVIEW OF THE CITY OF WINNIPEG FACILITIES AND OPERATIONS
TO DETERMINE WHERE REDUCTION OR ELIMINATION
OF CFCS AND HALONS CAN BE MADE"

JULY 1989

A REVIEW OF THE CITY OF WINNIPEG FACILITIES AND OPERATIONS TO DETERMINE WHERE REDUCTION OR ELIMINATION OF CFCs AND HALONS CAN BE MADE

BY: THE TASK FORCE ON CFCs AND HALONS:

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C. Kaufmann, Environmental Planning
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July 1989

SUMMARY

Human activities have had such an impact on our planet that we are now changing the balance of gases in the earth's atmosphere. Chemical contamination has reached the stratosphere and is threatening our planet's fragile ozone layer - a layer of gas that protects us from the damaging rays of the sun. The Ozone layer absorbs much of the sun's ultraviolet rays - dangerous radiation which can cause skin cancer, reduce crop yields and damage aquatic life.

> **The U.S. Environmental Protection Agency has estimated that an additional 154 million cases of skin cancer and 3.2 million deaths could result before the year 2075 if current global use of Ozone Depleting Substances continues.**

In September 1987 an international agreement on Ozone Depleting Substances,The Montreal Protocol, called for a 50 percent reduction in the 1986 levels by 1999 of consumption of five chlorofluorocarbons (CFCs) and a freeze at 1986 consumption levels of three Halons. The target reductionsin this protocol are currently undergoing international review and it is expected amendments will tighten the protocol.

To address this problem at municipal level, The City of Winnipeg established a Task Force to review its own facilities and operations to determine where reduction or elimination of Ozone Depleting Substances can be made.

This report documents the Task Force's findings and recommends a course of action for the City.

A survey of City of Winnipeg facilities and operations revealed that most of the Ozone Depleting Substances that can be reduced or eliminated are in refrigeration and air conditioning equipment as chlorofluorocarbons (CFCs). To a lesser extent, CFCs were found in sterilants, and in solvents. Foam products such as foam insulation contain CFCs but the CFCs are considered to be "banked" or locked in place. Ozone Depleting Substances also were found in fire extinguishers as Halons.

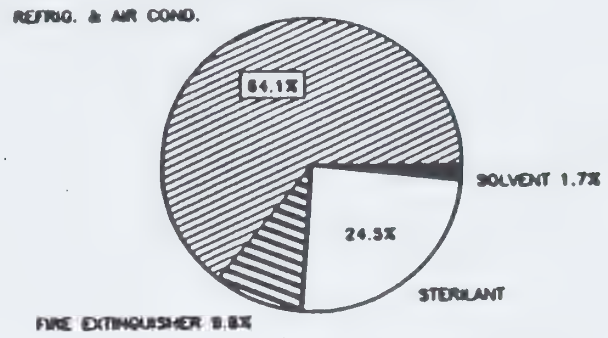

CHART 1 - CFC & HALON DISTRIBUTION (10,155 KG)

Although the City of Winnipeg facilities and operations contain a small fraction of the CFC's in Canada (much less than 1%) this does not mean the City can ignore the problem.

Environment Canada has published "Ozone Depleting Substances Regulation No. 1 (Chlorofluorocarbons)" in the April 22, 1989 Extract Canada Gazette, Part I. These regulations will ensure that Canada complies with the Montreal Protocol through the apportioning of production rights among the producers that were manufacturing CFCs in 1986. The Montreal Protocol calls for a reduction in designated CFC consumption by 1999 to 50% of 1986 levels.

These regulations will create a scarcity of these controlled substances and will induce development of substitutes and increase prices of the controlled substances.

Reducing or eliminating Ozone Depleting Substances found in the City facilities and operations must be viewed as a component of national and global efforts. The City can set an example for other municipalities and industries to follow.

Based on the survey results, literature review and contacts with other levels of government and industry, the Task Force made the following conclusions:

- It is possible to reduce or eliminate Ozone Depleting Substances in use in the City of Winnipeg facilities and operations however in order to be effective the private sector must be regulated through By-laws;
- The Ozone Depletion problem should not be ignored by the City;
- It will take time to make the necessary changes;
- Costs will likely be higher and availability of alternatives could be a problem;
- Energy use will increase;
- Purchasing policy is required;
- Work practise policy is required;
- Disposal policy is required;
- Continued contacts with Province and Federal Government is necessary;
- Demonstration projects with the Province should be initiated;
- An awareness program is required;
- Information should be shared with other municipalities;
- The Government of Canada be urged to phase out Methyl Chloroform and Carbon Tetrachloride.

There are a number of options to reduce the Ozone Depleting Substances used in the City of Winnipeg facilities and operations. These options include using alternative products and chemicals, recycling, conservation through work practices, and new technologies.

In order to accomplish these reductions and contribute to the global reductions of Ozone Depleting Substances the City must commit itself to pursue these options where feasible. These options require changes in policy and procedures and dedicated resources to initiate and ensure the necessary change.

The Task Force recommends that:

1. an Advisory Committee on Ozone Depleting Substances be established as soon as possible to deal with the reduction and elimination of these substances within the City facilities and operations;

2. a City of Winnipeg CFC and Halon Control By-law be created;

3. the Task Force Report be made available to other municipalities and organizations.

TASK FORCE ON CHLOROFLUOROCARBONS AND HALONS

A review of The City of Winnipeg facilities and operations to determine where reduction or elimination of CFCs and Halons can be made.

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1.0 INTRODUCTION

On February 15, 1989 City of Winnipeg Council adopted the following recommendation from the Executive Policy Committee: -

"That The City of Winnipeg commence an immediate review of its own facilities and operations to determine where reduction or elimination of chlorofluorocarbons and halons can be made. The review to be completed in 4 months, should be made available to Councillors and appropriate Standing Committees upon completion."

Subsequently, The Board of Commissioners appointed a Task Force to commence the review.

The Task Force has found it necessary to expand the scope of their mandate to include a City of Winnipeg By-law. During preparation of this report the Task Force determined that in order to effectively reduce or eliminate Chlorofluorocarbons and Halons in the City of Winnipeg facilities and operations it will be necessary to regulate the private sector through By-laws. Most of the City of Winnipeg airconditioning equipment is serviced by outside contractors and unless they are regulated any efforts to reduce these substances within the city would be futile. In addition the ozone depletion problem is a global problem and not limited to City of Winnipeg facilities and operations.

This Task Force Report provides background on the subject and details the results of the review of The City of Winnipeg facilities and operations.

Chlorofluorocarbons (CFCs) are a group of industrial chemicals used in the production of foam products, as refrigerants, solvents, sterilants, and aerosols, and Brominated Fluorocarbons (Halons) used in some fire extinguishers.

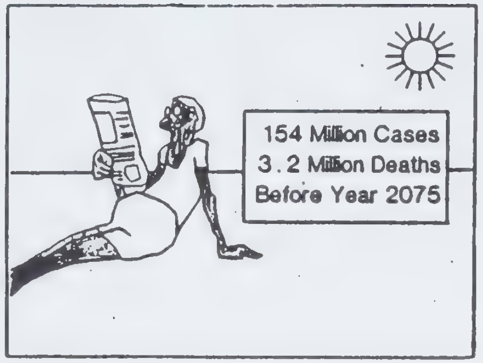
They are benign and inert at ground level but when CFCs and Halon reach the stratosphere, they break down to release chlorine and bromine which causes ozone destruction.

One chlorine atom can destroy as many as 100,000 ozone molecules before it is rendered inactive or removed from the atmosphere.

They are depleting the ozone layer as well as contributing 15% to global warming or "greenhouse" effect.

Appendix A and B contain details on the ozone layer and how CFCs and Halons destroy ozone.

The ozone layer acts as a natural filter, absorbing most of the sun's ultraviolet (UV) rays. Any depletion of the ozone layer, even small changes, results in an increase of UV radiation reaching the earth's surface which will cause serious damage to living tissue, animal or plant.



The U.S. Environmental Protection Agency has estimated that an additional 154 million cases of skin cancer and 3.2 million deaths could result before the year 2075 if current global use of fully halogenated CFCs continues.

Global efforts to address ozone depletion in the stratosphere have been underway since 1981. The Vienna Convention in 1985 for the Protection of the Ozone Layer, developed under the United Nations Environment Program was the "first" for safeguarding the environment and health. The Convention provides the framework for cooperative activities including the exchange of information related to the ozone layer. The Convention provided for the subsequent creation of protocols (free standing treaties) for matters such as control of specific or families of pollutants. The 1987 Montreal Protocol is the first such protocol to deal with "Ozone Depleting Substances".

The Montreal Protocol calls for a 50 percent reduction in the 1986 levels by 1999 of consumption of five chlorofluorocarbons (CFC-11, 12, 113, 114, 115) and a freeze at 1986 consumption levels of three brominated fluorocarbons called Halons (Halon 1211, 1301, 2402). The target reductions in this protocol are currently undergoing international review and it is expected amendments will tighten the protocol.

The Federal Government recently released draft regulations calling for at least an 85 percent reduction of controlled CFCs by no later than 1999.

A World Conference in April 1989 held in Helsinki called for an agreement to phase out the Ozone Depleting Substances listed in the Montreal Protocol as soon as possible, but not later than year 2000 and for that purpose to tighten the Montreal Protocol.

CFCs and Halons differ in the degree to which they destroy ozone, which is referred to as the "ozone depletion potential" (ODP) per kilogram of emissions from each chemical. This measure served as one criteria for deciding which chemicals to regulate under the Montreal Protocol. Table 1 lists chemicals, their ODP and atmospheric lifetime. Of all CFCs, CFC-11 and CFC-12 are the most common, have the strongest potential to deplete ozone and are used as the reference point to calculate ODP factors for other CFC's and similarly structured chemicals. Although the manufacture and use of Halons is very small compared with CFCs, Halons are a serious threat to the Ozone because their ODP (3, 6 and 10) is much greater than that of CFCs. Table 1 below lists the Ozone Depleting Substances and their ODPs.

Table 1 - Ozone Depleting Substances

Chemical	**ODP**	**Atmospheric Lifetime (Years)**
CFC-11	**1.00**	**75.0**
CFC-12	**1.00**	**111.0**
CFC-113	**0.80**	**90.0**
CFC-114	**1.00**	**188.0**
CFC-115*	**0.60**	**380.0**
Methyl-chloroform**	**0.10**	**6.5**
Carbon tetra-chloride**	**1.06**	**50.0**
Halon-1211	**3.00**	**25.0**
Halon-1301	**10.00**	**110.0**
Halon-2402	**6.00**	**NA**

*** CFC-115 is part of a blend of CFC-502 (CFC-502 is a 51/49 mixture of CFC-115 and HCFC-22)**

****Methyl chloroform and carbon tetrachloride are not included in the protocol.**

The review of The City of Winnipeg facilities and operations and the determination of what can be done to eliminate or reduce CFC and Halons was conducted by the Survey and the Strategy working groups, sub-groups of the Task Force. The Survey group conducted a survey of all City facilities and operations. This survey identified where the problem substances are located, in which equipment they are found and the total quantity and quantities in each piece of equipment. The result of the survey are found in Part 5 of this report. The Strategy group conducted a literature review, contacted federal, provincial and other municipal governments and selected industries.

Options to reduce or eliminate the Ozone Depleting Substances in City of Winnipeg facilities and operations are reported in Part 6. Actions by Government and Industry follow in Part 4.

Based on the survey results and strategies available for reduction of Ozone Depleting Substances, Conclusions (Part 2) and Recommendations (Part 3) were directed specifically to The City of Winnipeg.

Although not included as part of the original Task Force a representative from the Waterworks, Waste and Disposal Department was invited to serve on the Task Force. This was necessary to reduce duplication in the Recycling Study they are presently conducting and the inevitable need to recycle and dispose of these Ozone Depleting Substances.

Further details on Ozone Depleting Substances and Options are available from the publications listed in the bibliography at the end of this report.

2.0 CONCLUSIONS

Based on the survey results, literature review and contacts with other levels of government and industry, the Task Force made the following conclusions:

- It is possible to reduce or eliminate Ozone Depleting Substances in use in the City of Winnipeg facilities and operations however in order to be effective the private sector must be regulated through By-laws;
- The Ozone Depletion problem should not be ignored by the City;
- It will take time to make the necessary changes;
- Costs will likely be higher and availability of alternatives could be a problem;
- Energy use will increase;
- Purchasing policy is required;
- Work practise policy is required;
- Disposal policy is required;
- Continued contacts with Province and Federal Government is necessary;
- Demonstration projects with the Province should be initiated;
- An awareness program is required;
- Information should be shared with other municipalities;
- The Government of Canada should be urged to phase out of Methyl Chloroform and Carbon Tetrachloride.

2.1 Ozone Depleting Substances can be Reduced or Eliminated

Based on the survey results (Part 5) and options available (Part 6) there are several areas in The City of Winnipeg facilities and operations where reduction or elimination of Ozone Depleting Substances can be presently made. The specifics of using those alternatives have to be worked out. Further reductions can be made as substitutes and new technology become available. The areas and availability of the options are listed below. The availability of alternatives is based on Environment Canada's "Report on Options".

1. Rigid Foams

Availability of Alternatives

- Use substitute insulation such as glass fibre or non-urethane foam insulation. This action will send a clear message to industry that foams

with the problem CFC's will no longer be acceptable and that they quickly develop environmentally safe substitutes. In the short term costs will increase for the thicker glass fibre insulation and any required building design changes.	Presently Available
- Use foams made with alternative CFCs or soft CFCs such as HCFC-123, HCFC-141b, HCFC-22 or HFC-134a.	1992
- Use refrigerators that utilize vacuum panel insulation when they become available.	?

2. Flexible Foams

- Use a substitute material for foam in furniture such as natural or synthetic fibrefill.	Presently Available
- Use a high density foam which minimizes the use of CFC-11. This will be more expensive and harder to accept by consumers since it is not as comfortable as soft foam.	Presently Available
- Use of foam blown with water.	Presently Available
- Use of foam blown with alternative CFCs or soft CFC such as HCFC-123 and HCFC-141b	1992

3. Refrigeration and Air Conditioning

- Use either HCFC-22 or nitrogen for field testing.	Presently Available
- Retrofit existing equipment with isolation valves during down time. This will facilitate servicing and reduce refrigerant losses during servicing. Also purge system should not be vented to atmosphere but recovered and recycled.	Presently Available
- Use of high-pressure centrifugal chillers utilizing HCFC-22	Presently Available
- Recovery of refrigerant from refrigerators and air conditioning equipment prior to disposal. This should be done by dealers, service agents and salvagers prior to final disposal. Provincial regulations would be required.	Presently Available
- Use devices to recover, recycle and re-use refrigerant. A portable	

unit could be used in-house to recycle the 241 kg of CFC-12 used in chillers each year. In addition the unit could be used to recover and recycle CFC-22 should any of our central air conditioners, small chillers, de-humidifiers, refrigerators or window air conditions require servicing. Presently most of this equipment is serviced by outside contractors. Fall 1989

- Deal only with those outside contractors who recycle CFC's 1990

- New work practises can be adopted to reduce inadvertent loss of system refrigerant charge. American Society of Heating, Refrigeration and Air Conditioning Engineers (ASHRAE) is presently developing workable guidelines to minimize CFC losses due to servicing. Environment Canada has produced a draft "Proposed Code of Good Practice for the Reduction of CFC emissions in Refrigeration and Air Conditioning Systems. 1990

- Use alternative refrigerants for any new units
    HCFC-22
    HCFC-123 1994-1999
    HFC-134a 1994-1999

- Use alternative refrigerant in existing units (drop-in refrigerant) HFC-134a 1994-1999

4. Solvents

- Use alternative solvents such as Freon SMT as an electronic cleaning agent and Freon MCA as a metal cleaning agent. Both will reduce the amount of CFC-113 but are only interim products. The Employee Occupational Safety and Health (E.O.S.H.) Division should be consulted for these and any other alternative solvents to be considered such as trichloroethylene and terpenes. Also water and steam should be considered in some cleaning applications. Presently Available

- Work practices should be examined to determine where waste can be reduced. Government sources indicate that about 50% of solvents are wasted. Recycling is possible and is presently performed to recycle 50-70% of the solvent used as a grease extraction agent. Presently Available

- Use of new non-ozone

depleting substitute products with the same properties of CFC-113.	1995-1999

5. Sterilants

- Use steam sterilization for medical instruments that do not require gas sterilization.	Presently Available
- For the cheaper surgical equipment use disposable equipment that would normally require gas sterilization.	Presently Available
- Use a 10% ethylene oxide and 90% carbon dioxide mixture for gas sterilization. Because of higher pressures current equipment and lines may have to be upgraded.	Presently Available
- Use the substitute propellant HCFC-134a instead of CFC-12.	1992-93

6. Fire Extinguishers

- Use alternate portable fire extinguishers instead of the Halon portable extinguishers. There are 42 portable Halon units (144 kgs) used in applications where it may be possible to use an alternate such as dry chemical. Once these existing portable Halon extinguishers have been used up the extinguishers with alternate agents should be used.	Presently Available
- Limit Halon 1301 systems only to computer equipment ("in cabinet" systems) and use alternate agents such as dry chemical in other areas.	Presently Available
- Deal only with those manufacturers who recycle their Halon.	Presently Available
- Use alternate agents for discharge testing of new total flooding systems. HCFC-22, Halon 121 and Sulfur Hexafluoride (SF6) are presently being researched for this use.	1990-92
- Use alternative enclosure leakage testing methods such as fan pressurization and tracer gas techniques.	1992

7. Aerosols

- Substitute cleaning agents or techniques should be used in the cleaning of electrical/ electronic equipment. Products may be available in non-ozone depleting forms such as hand	Presently

pumps and spray bottles. Available

- Use only those aerosols that do not contain CFCs as the propellant except those designated as essential by Environment Canada. 1990

2.2 Ozone Depleting Problem Can Not be Ignored

Although the City of Winnipeg facilities and operations contain a small fraction of the CFC's in Canada (much less than 1%) this does not mean the City can ignore the problem.

Environment Canada has published "Ozone Depleting Substances Regulation No. 1 (Chlorofluorocarbons)" in the April 22, 1989 Extract Canada Gazette, Part I. These regulations will ensure that Canada complies with the Montreal Protocol through the apportioning of production rights among the producers that were manufacturing CFCs in 1986. The Montreal Protocol calls for a reduction in designated CFC consumption by 1999 to 50% of 1986 levels.

These regulations will create a scarcity of these controlled substances and will induce the development of substitutes and increase prices of the controlled substances.

Reducing or eliminating Ozone Depleting Substances found in the City facilities and operations must be viewed as a component of national and global efforts. The City can set an example for other municipalities and industries to follow.

2.3 Timing

The industrialized world is in a transitional process to change over from Ozone Depleting Substances to environmentally safe substances. To do this without incurring major disruptions to industry and users will take time.

2.4 Costs and Availability

There is little doubt that in the next 10 years costs of the Ozone Depleting Substances and alternative replacement substances will be as much as 3 to 5 times higher than at present. Availability of Ozone Depleting Substances and alternative substances could also be a problem. To reduce the impact of these higher costs and lower availability, the City of Winnipeg can reduce or eliminate our dependency by the methods outlined in section 2.1.

2.5 Energy

An evaluation of the long term impact on the refrigeration industry and the development of alternative technologies was recently conducted for the Department of Energy (D.O.E.) in the U.S.A. The evaluation considered four scenarios.

1. Fall Back Position - utilizes the soft HCFC-22, for refrigerants.
2. Worst Case Scenario - use of ammonia and propane for refrigerants if all chlorine containing compounds are banned.
3. Near Drop-In Substitutes - Use of HCFC-123 and HCFC-141b.

4. Advanced Technology - vacuum insulated panels for refrigerators, sterling absorption cycle refrigeration, etc.

The energy impacts varied from -35% for the Advanced Technology up to 60% more for the Worst Case Scenario compared to current refrigeration technology.

In new buildings, thicker insulation will be required for glass fibre and other insulation products to maintain the same thermal resistance as the foam products. Otherwise more energy will be used.

2.6 Purchasing Policy

In order to effect reduction or elimination within the City's Operation in areas where the Ozone Depleting Substances are used, a purchasing policy will be required. Where feasible, the purchasing policy should include the use and preference of alternative substances such as:

- fibreglass insulation instead of polyurethane foam.

- HCFC-22 cooled refrigeration and air conditioning equipment instead of CFC-11 and 12.

- non-halon substances in testing of fire extinguishing systems.

- non-halon portable systems unless for computer or other sensitive electronic/electrical equipment.

Also contracts should be with those contractors that recycle CFCs and Halons and adhere to the new ASHRAE work practise guidelines and/or Environment Canada's Code of Good Practice.

2.7 Work Practice Policy

The City should adopt a work practice policy for all its staff in all departments for adherence to the new ASHRAE work practise guidelines and/or Environment Canada's Code of Good Practice.

2.8 Disposal Policy

The City should adopt a policy for reclaimation of drainable CFC products prior to disposal and enter into discussion with the Provincial and Federal Government regarding ultimate disposal options.

2.9 Provincial and Federal Government Contacts

For purposes of policy development and information on legislation and initiatives, the City should maintain contact with the Province's Department of Environment and Environment Canada.

2.10 Joint Demonstration Project(s)

Interest has already been expressed by the Province's Environment Department for initiating a demonstration CFC recycling project at a location in Winnipeg. The City should support and participate in this project.

2.11 Awareness Program

Literature and other information transfer avenues should be developed on the CFC problem in City of Winnipeg facilities. This information should then be transferred to all staff members to facilitate implementation of the options to reduce or eliminate CFC's eg: The slide show "Ozone Depletion and CFCs - A Technological Challenge" produced by the American Society of Heating, Refrigeration and Air Conditioning Engineers (ASHRAE) is an excellent slide show to create the awareness and provide basic technical background. The Research Branch has a copy of this slide show.

2.12 Information Transfer

This Task Force Report on CFCs and Halons should be made available to all other municipalities perhaps through the Federation of Canadian Municipalities, and the Manitoba Association of Urban Municipalities and other organizations.

2.13 Methyl Chloroform and Carbon Tetrachloride

The Government of Canada should be urged to consider phase out of Methyl Chloroform and Carbon Tetrachloride which are now not designated controlled substances listed by the Montreal Protocol.

The U.S. Environmental Protection Agency has estimated that these two substances are major contributors to the build up of chlorine in the atmosphere and are considering their phase out. Methyl Chloroform is used as a degreasing agent for metals and electronics equipment parts and Carbon Tetrachloride is used to make CFCs as well as pesticides and dyes.

3.0 RECOMMENDATIONS

The present Task Force members possess technical knowledge and expertise in the Ozone Depletion field through their research for this report and through their professional background. This knowledge should be utilized by the City.

The establishment of a central Advisory Committee is more efficient than developing the pre-requisite expertise in each department.

1. **An Advisory Committee on Ozone Depleting Substances should be established as soon as possible to deal with the reduction and elimination of these Substances within the City facilities and operations. Members of the Committee would be drawn from the Task Force and other interested personnel and be charged with the following responsibilities:**

a) to continue to acquire and disseminate technical knowledge in all matters of Ozone Depleting Substances:

b) to liaise with the Province of Manitoba and Government of Canada and monitor progress with laws and regulations pertaining to Ozone Depleting Substances;

c) to monitor industrial - technical progress in the development of substitute substances and technologies;

d) to recommend specific action for Civic Departments to reduce or eliminate Ozone Depleting Substances in their facilities and operations;

e) to review and recommend changes in purchasing policy and operating and maintenance procedures in keeping with developing technology;

f) to liaise with industry and business with the goal to reduce CFC and Halon emissions in their process including the implementation of City By-laws;

g) to identify resource requirements and associated costs to carry out the above functions.

2. **A City of Winnipeg CFC and Halon Control By-law should be created.**

3. **The Task Force report should be made available to other municipalities and organizations.**

4.0 ACTION BY GOVERNMENT & INDUSTRY

4.1 Government

Toronto

On April 6, 1989 The City of Toronto council passed By-law 230-89, "To prohibit and regulate the manufacture, sale, distribution, use and disposal of certain products, material, and equipment containing or manufactured with chlorofluorocarbons and halons". Sections of the By-law ARE scheduled to come into force in seven months after the date of passing of the By-law.

Ontario Government

The Ontario government is planning to introduce legislation to have all thermal insulation containing CFCs removed from the market by July 1990.

Other Provinces

Legislation has also been recently drafted in British Columbia and Nova Scotia.

Canadian Government

National Research Council

The National Research Council Institute for Research in Construction (IRC) is participating in a cooperative research project with industry on insulation containing alternative gases.

By September 1989, a comparative investigation is expected to be complete on the properties of several foam products containing alternative blowing agents.

Environment Canada

Regulations

Environment Canada has published "Ozone Depleting Substances Regulation No. 1 (Chlorofluorocarbons)" in the April 22, 1989 Extract Canada Gazette, Part I. These regulations will ensure that Canada complies with the Montreal Protocol through the apportioning of production rights among the producers that were manufacturing CFCs in 1986. The Montreal Protocol calls for a reduction in designated CFC consumption by 1999 to 50% of 1986 levels.

These regulations will create a scarcity of these controlled substances and will induce development of substitutes and increase prices of the controlled substances.

The Federal Government will likely regulate aerosols by January 1, 1990. The regulation will state that no aerosols shall use CFC products except those deemed essential such as for medicinal and pharmaceutical use.

Codes

As part of their action program to reduce CFC emissions by major CFC user industries, Environment Canada has prepared a draft code "Proposed Code of Good Practice for the Reduction of CFC Emissions in Refrigeration and Air Conditioning Systems". Environment Canada intends that this Code be adopted in agreement with the relevant industrial associations and implemented by the industry in general. The Code is based largely on a similar document published by the Commission of European Communities.

The Code is intended to cover all refrigeration systems within residential, commercial and industrial refrigeration, heat pumps, and air conditioning as well as mobile air conditioning.

The Code includes sections on servicing; usage; recovery, reuse and disposal of refrigerants; handling and storage of refrigerants; disposal of equipment containing CFCs; training of personnel; and SAE proposed standards.

Options Report

Environment Canada has published a report "Preserving the Ozone Layer - A Step Beyond the Montreal Protocol" in April 1989. This report on options for meeting Canada's objective to completely eliminate emissions of controlled Ozone Depleting Substances within the next ten years significantly *accelerates* the Montreal Protocol timetable. This report is part of the regulation development process and the City of Winnipeg Task Force supplied comments on it for selection of the best options.

Most of the options to reduce or eliminate the controlled CFC and Halons recommended by the Task Force are based on this options report.

Manitoba

Representatives of the Task Force met with the Director of the Planning, Research and Evaluation Branch and the Recycling Coordinator of the Provincial Department of Environment to discuss what actions the Province is planning.

The Province is in the development phase of addressing the CFC problems and are investigating four areas:

- National Coordination
- Manitoba Information
- Restricting CFC Use
- Capture and Recycle

They are examining restrictions consistent with what Environment Canada are considering and are preparing legislation to be tabled in the fall 89 session of the legislature. A national working group on federal-provincial control strategies for CFC's and Halons has been established at the request of the Canadian Council of Ministers of the Environment.

They indicated a willingness to work together with the City particularly on a demonstration project to capture and recycle CFCs.

The Manager of System Development of the Manitoba Hazardous Waste Management Corporation (MHWMC) addressed the Task Force on CFCs and Halons. The MHWMC are investigating the requirements of handling CFCs and will most likely address refrigeration and air conditioning first. However, the Province has not yet directed MHWMC to handle CFC as a hazardous waste. CFCs will be much cheaper to handle as a recyclable good rather than a hazardous waste. Transportation costs could double if CFCs are transported under the Transportation of Dangerous Goods Act. Incineration of CFCs may be possible although there could be hazardous by-products such as fluoride.

United States

The Environmental Protection Agency's (EPA's) Advanced Notice of Proposed Rulemaking (ANPR) on the "Protection of Stratosphere Ozone" is proposing possible next steps to the Montreal Protocol. Additional restrictive measures on the targeted CFCs would be a result of scientific information developed since the signing of the Protocol. The ANPR may advance the Protocol timetable in the U.S. to an 85 to 95% cutback within a 10 year period.

Several states have already introduced legislation on CFCs, including Connecticut, Massachusetts, Michigan, Vermont, Oregon, and New York. Proposed legislation in Oregon went so far as to "outlaw" CFCs in the state.

A bill before Congress now will accelerate the timetable even further. The "Gore Bill" calls for the total prohibition of production and release of CFC-11, 12 and 113 by 1996 (the Montreal Protocol called for a 50% reduction by 1998).

Also the bill included prohibition of a secondary list of regulated chemicals CFC-114, 115 along with HCFC-22 by the year 2000. The EPA view HCFC-22 as part of the solution and it was not included in the Montreal Protocol. Public hearings, debate, deliberation, negotiations and compromise are expected to take place prior to any federal actions becoming complete.

4.2 Industry

Copeland

Copeland, a major manufacturer of refrigeration compressors is developing 45 new compressor models and expanding HCFC-22 application ranges to provide replacements for their entire CFC-12 product offering. However, in the short term, they are still recommending the use of CFC-502 for low temperature refrigeration. They are conducting research into methods of using HCFC-22 in the low temperature range.

Dupont

Dupont, a major manufacturer of chemicals including CFCs, is presently developing new chemicals for both new and existing equipment. These alternative fluorocarbon chemicals include HFC-134a, HCFC-141b, HCFC-123 and HCFC-124 and could be used to replace CFC-11, and 12 as refrigerants and blowing agents for foam production.

Toxicity testing by 15 CFC producers is underway and could be finished by 1992-93.

Dupont has also introduced Freon SMT a new interim cleaning agent for the electronics industry. Freon SMT reduces the amount of CFC-113 in cleaning machines using solvent by approximately 25%. They also introduced Freon MCA a metal cleaning agent that will reduce the amount of CFC-113 in cleaning machines by approximately 37%.

Dupont is also evaluating potential candidates to replace Halon 1301.

National Fire Protection Research Foundation (NFPA)

The NFPA Research Foundation is analyzing alternatives to Halon 1301 total flooding system discharge tests and guidelines for measuring and correcting Halon 1301 leaks.

American Society of Heating, Refrigeration and Air Conditioning Engineers (ASHRAE)

ASHRAE, a widely recognized professional technical organization that develops industry guidelines, is presently developing workable guidelines to minimize inadvertent losses of CFCs during manufacture, installation, service and disposal of refrigeration and air conditioning equipment. These guidelines should be released in draft form in July 1989.

ASHRAE has produced a position paper entitled "Possible Environmental Effects of Chlorofluorocarbons". Along with the guidelines mentioned above, ASHRAE will encourage research, allocate research funds for alternatives and reclaimation, encourage improved designs and communicate emerging opportunities for technology transfer and reduction of CFC emissions.

Recycling Industries

Local and national recycling industries are showing interest in entering the CFC reclaimation and recycling field as well as storage and environmentally safe disposal methods. At present, they are waiting Federal and Provincial guidelines.

5.0 CITY OF WINNIPEG SURVEY RESULTS

A survey of City of Winnipeg facilities and operations was conducted to determine the location and quantity of Ozone Depleting Substances. A copy of the survey sheet "Inventory of Equipment and Material Containing CFC's or Halons" is included Appendix C. The computer printout of the Inventory is found in Appendix D.

Foam products were not included on the survey sheet, however the quantity of foam in buildings (as insulation and furniture) and in vehicles (as seats) was estimated.

Although the survey sheets lists aerosols it was decided to exclude them. 95% of all aerosol products do not contain CFC's and the remaining 5% is a very small portion of the total amount of ozone depleting substances. Furthermore, they will be banned by January 1, 1990 by the Federal Government.

Rented or leased appliances (drink machines, vending machines, etc.) and vehicles containing ozone depleting substances were eliminated from the survey.

The Employee Occupational Safety and Health Division through the Work Place Hazardous Materials Information System (WHIMIS) is developing an inventory of hazardous substances which will include some of the Ozone Depleting Substances such as solvents, sterilants and containers of refrigerants. The Purchasing Department has just developed an inventory of all portable fire extinguishers including the portable Halon extinguishers for the purpose of obtaining a service contract (including replacement of some fire extinguishers) for all departments. A three year contract is expected to be awarded in early 1990.

There are six major categories of products that use CFC's and Halons and account for most ozone depleting emissions. They include rigid (closed cell) and flexible (open cell) foams, refrigeration and air conditioners (automobile, window and chillers), solvents, sterilants and fire extinguishers. Each utilizes different CFCs and halons for different purposes: either to cushion, insulate, refrigerate, air condition or clean.

Chart 1 below shows the overall distribution of CFCs and halons among applications in the City of Winnipeg.

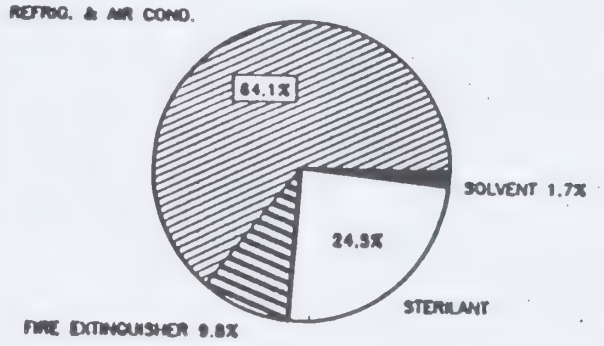


CHART 1 - CFC & HALON DISTRIBUTION (10,155 KG)

Foams have been placed on a separate chart (Chart 2) since they are a larger quantity by volume and of different densities. Also, flexible foams contain very little CFC.

Total volumes of foam consist of non-CFC solids and CFC filled voids. The actual weights of CFC in the voids has not been calculated.

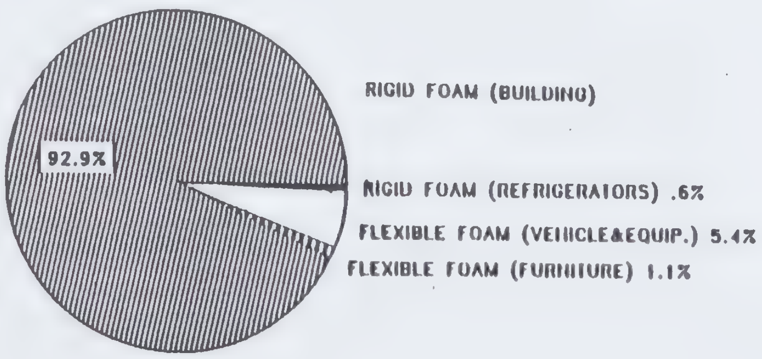


CHART 2 – RIGID & FLEXIBLE FOAMS DISTRIBUTION (25,830 CUBIC METER)

Table 2 below lists the six major product categories, the CFCs and Halons they use and the total quantity (kg's) from the survey.

TABLE 2

MAJOR SOURCES AND QUANTITIES (kgs) OF CFCs AND HALONS

CITY OF WINNIPEG

	Chlorofluorocarbons (CFC)						Halons	
	11	12	22[2]	113	500[2]	502[1]	1211	1301
1. RIGID FOAMS[3]	x	x	x					
2. FLEXIBLE FOAMS[3]	x							
3. REFRIGERATION AND AIR COND.	1962	1102	3053		392	1		
4. SOLVENTS				170				
5. STERILANTS		2488						
6. FIRE EXTINGUISHERS							144	847
TOTALS (kgs) (Excluding Foams)	1962	3590	3053	170	392	1	144	847

Notes:

[1] CFC-502 is a 51/49 blend of CFC-115 and HCFC-22

[2] HCFC-22 and CFC-500 are not included in the Protocol

[3] Foams quantity are in volumes see sections 5.1 and 5.2.

5.1 Rigid Foams (Closed Cell)

Rigid foams were not included in the survey, however estimates were made. Most of the rigid foams are used as insulation in buildings and refrigerators.

The CFCs used as blowing agents to produce foam include CFC-11, CFC-12 and CFC-113. Very little CFC is emitted during production of rigid foams. The insulating properties of the foam are based on trapping as many CFC gas bubbles as possible in the product. These CFC's are referred to as being "banked".

Based on the number of buildings with flat roofs, their area, etc., the amount of rigid foam was estimated to be 24,000 cubic meters.

The amount of CFCs in the insulation of 517 refrigerators is approximately 150 cubic meters.

5.2 Flexible Foams (Open Cell)

Flexible foams were not included in the survey, however estimates were made. Most of the flexible foams are used in office furnishings and vehicle seats. No inventory of furnishings was available.

Most of the CFC-11 used to produce flexible foam products are released at the manufacturing plant and there is very little "banked" in the product.

Based on the number of staff and the amount of foam in typical chairs the amount of flexible foam in office furnishings was estimated at 280 cubic meters.

The estimate of flexible foam in City owned vehicles and equipment is 1,400 cubic meters.

5.3 Refrigeration and Air Conditioning

As shown on Chart 1, refrigeration and air conditioning account for approximately 2/3 of all Ozone Depleting Substances excluding rigid foams, found in the City of Winnipeg.

Table 3 below lists the three major categories, ten product groups and the total quantity (kgs) of the CFCs found in refrigeration and air conditioning equipment.

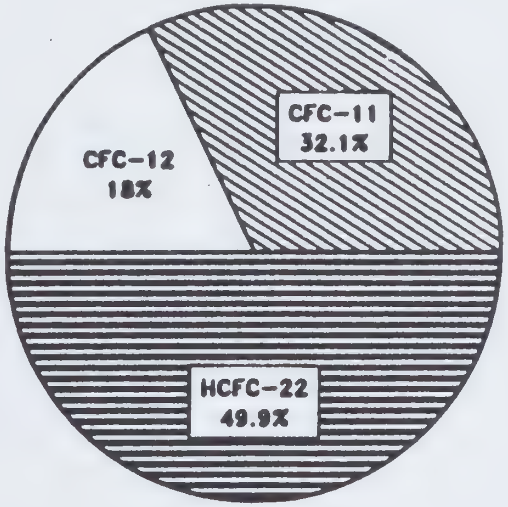
TABLE 3

REFRIGERATION AND AIR CONDITIONING SOURCES AND QUANTITIES (kg) OF CFCs
CITY OF WINNIPEG

	CHLOROFLUOROCARBONS (CFC)				
	11	12	22	500	502
1. COMMERCIAL REFRIGERATION AND AIR CONDITIONING					
REFRIGERATED CASES		16			
CENTRAL AIR CONDITIONING		195	1737	14	
CHILLERS	1656	274	82	363	
DEHUMIDIFIERS		19	2		
HEAT PUMPS			881		
CONTAINERS	305	241	184	14	
WATER COOLERS		18	0	1	

	11	12	22	500	502
2. RESIDENTIAL REFRIGERATION AND AIR CONDITIONING					
REFRIGERATORS	1	157	11		1
WINDOW AIR CONDITIONERS		17	156		
3. VEHICLE AIR CONDITIONING		165			
TOTALS (kgs)	1962	1102	3053	392	1

As shown on Chart 3, about half of the CFC used for refrigeration and air conditioning in the City of Winnipeg are HCFC-22. HCFC-22 chlorofluorocarbon contains hydrogen making it less persistent in the environment. This CFC is called a soft chemical because its ozone depletion potential (ODP) is 0.05 and it has an atmospheric lifetime of 20 years. HCFC-22 is considered part of the solution since it can act as a "bridge" until new products are developed. CFC-500 is not included in the Montreal Protocol and CFC-502 is a mixture of 51/49 CFC-115 and HCFC-22.



ART 3 – REFRIG. & AIR COND. CFC DISTRIBUTION (6115 KG)

The remaining CFC's used for refrigeration and air conditioning are the so called hard chemicals CFC-11 and CFC-12 with ODP of 1.0 and atmospheric lives of 75 and 111 years respectively.

As shown on Chart 4, all of CFC-11 is used in chillers or stored in containers which are used for recharging and testing chillers. The three chillers that use CFC-11 are located in City Hall, the Public Safety Building and the Centennial Library.

In addition, 0.57 kg of CFC-11 is used in a refrigerator by Operations Department District No. 2.

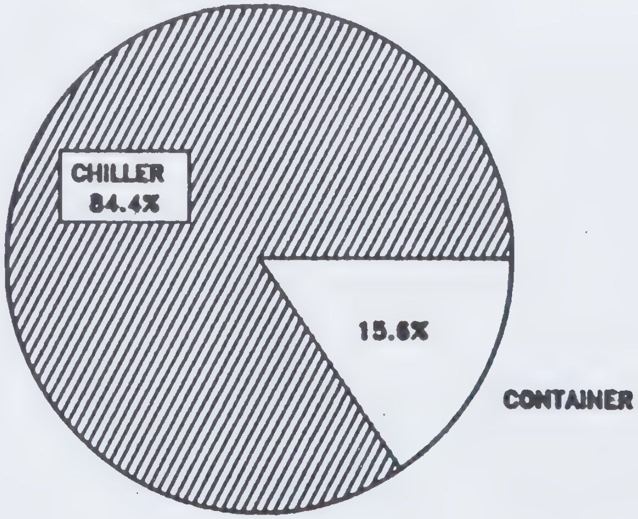


CHART 4–REFRIG.&AIR COND.CFC–11 DISTRIBUTION(1961 KG)

As shown on Chart 5, CFC-12 is used in a variety of applications. Most of it however occurs in four areas:

46.8% - Chillers and Containers used to recharge and test chillers
17.7% - Commercial Central Air Conditioners
14.2% - Residential Refrigerators
15 % - Vehicle Air Conditioners

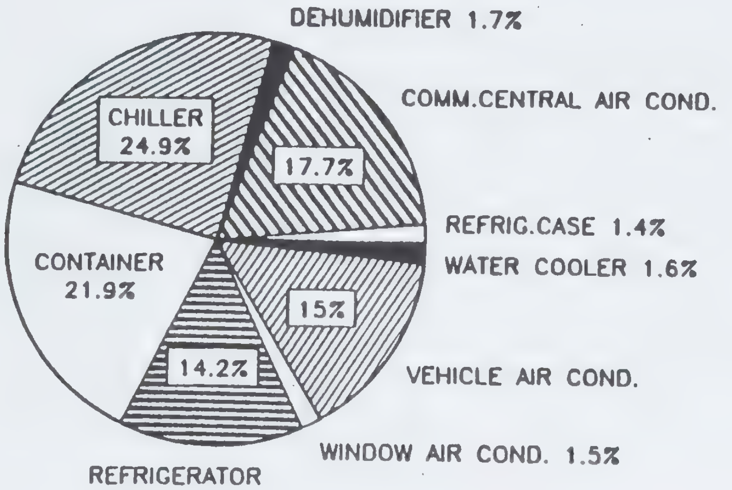


CHART 5-REFRIG.&AIR COND.CFC-12 DISTRIBUTION(1102 KG)

As shown on Chart 6, HCFC-22 is mostly used in commercial central air conditioning and heat pumps.

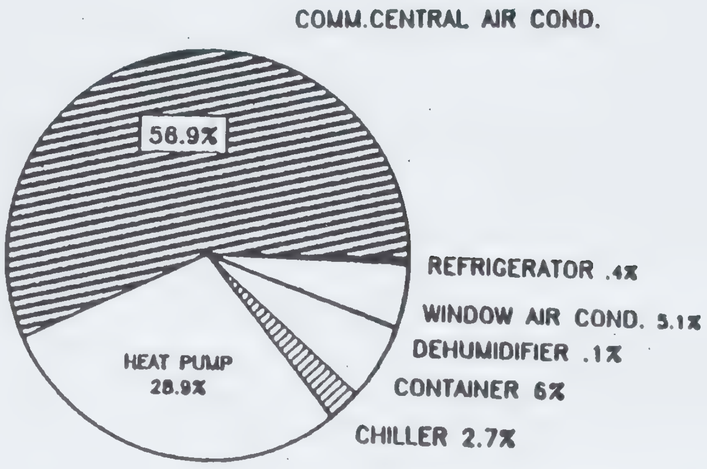


CHART 6-REFRIG.&AIR COND.HCFC-22 DISTRIBUTION(3053 KG)

5.3.1. Commercial Refrigeration and Air Conditioning

Refrigerated Cases (Total 16 kg of CFC-12) A total 21 refrigerated cases using CFC-12 for a total weight of 16 Kg was determined from the survey. Refrigerated cases are used as a stand-up or upright coolers for cooling milk or drinks. There are likely many more cases which are not included in the survey since they are vendor owned.

Central Air Conditioning (Total 1932 kg of CFC-12 and HCFC-22)
A total of 18 central air conditioning units using CFC-12 (195 kg) and 217 units using HCFC-22 (1737 kg) were determined from the survey. These units are used mainly to cool offices and computer equipment areas and can consist of roof mounted, air cooled, floor mounted water cooled or split air conditioning units. In addition, if community centres are included then an additional 700 kg of mostly HCFC-22 are estimated for the 90 community centres.

Chillers (Total 2012 kg of CFC-11, CFC-12 and HCFC-22)
A total of 3 chillers using CFC-11 (1656 kg), 4 using CFC-12 (274 kg) and 3 using CFC-22 (82 kg) were determined from the survey.

These units are used mainly to cool large buildings and are either mounted in the basement or in the penthouse. The largest unit being the Carrier chiller CFC-11 (816 kg) used to cool City Hall.

Dehumidifiers (Total 21 kg of CFC-12 and HCFC-22)
A total of 25 dehumidifiers using CFC-12 (19 kg) and 2 using HCFC-22 (2.32 kg) were determined from the survey. These units are used to condense moisture out of the air in pneumatic control lines in larger buildings. They are sometimes referred to as "refrigerated air dryers". They are also used in ice arenas to dehumidify during ice making.

Heat Pumps (Total 881 kg of HCFC-22)
A total of 31 heat pumps using HCFC-22 (881 kg) were determined from the survey. Most of these units are used in space heating application, however at least three indoor ice arenas use HCFC-22 ice plants.

Water Coolers (Total 19 kg of CFC-12 and HCFC-22 and CFC-500)
A total of 77 water coolers using CFC-12 (18 kg), 2 using HCFC-22 (0.41 kg), and 4 using CFC-500 (0.54 kg) were determined from the survey. A water cooler is a refrigerated unit that is used to cool drinking water in offices and other buildings.

Containers (Total 730 kg of CFC-11, CFC-12 and HCFC-22)
A total of 5 containers of CFC-11 (305 kg), 7 of CFC-12 (241 kg) and 8 of CFC-22 (184 kg) was determined from the survey. These refrigerants are used by service staff in Civic Properties, Winnipeg Hydro and Municipal Hospital for recharging, testing and filling some of the larger chillers.

5.3.2 Residential Refrigeration and Air Conditioning

Refrigeration (Total 170 kg of CFC-11, CFC-12, HCFC-22, CFC-502 and CFC-717)
A total of 2 refrigerators using CFC-11 (0.57 kg), 515 using CFC-12 (157 kg), 6 using HCFC-22 (11 kg) one using CFC-502 (0.51 kg) and one using CFC-717 (0.28) were determined from the survey. CFC-717 is Ammonia and CFC-502 (ODP=0.33) is a 51/49 mixture of CFC-115 (ODP=0.6) and HCFC-22 (ODP=0.05).

These units are used for refrigerators, freezers, ice machines, slush machines, and incubators.

Fountain drink dispensers (CFC-12) found mainly in community centres were not included in the survey since they are vendor owned.

Window Air Conditioners (Total of 156 kg of HCFC-22)
A total of 240 of window air conditioners using HCFC-22 (156 kg) were determined from the survey. These window air conditioners vary in size from 5,000 BTU/hr to 25,000 BTU/hr (2 tons of cooling).

5.3.3. Vehicle Air Conditioners

A total of 106 vehicle air conditioners using CFC-12 (165 kg) were determined from the survey. The air conditioning units are installed in ambulances, police cars, meter van, landfill compactors and tractors, and miscellaneous vehicles. The air conditioners in these vehicles are serviced by outside contractors. Other vehicles that the City leases or rents may contain air conditioning units however these were not included in the survey.

5.3.4. Annual Usage of CFCs for Charging or Servicing

Together, the commercial, residential and vehicle sectors accounted for 7.5 kilotonnes or 36 per cent of the total CFC usage in Canada in 1987 (Environment Canada, April 1989).

Environment Canada estimate that two thirds of that amount is loaded into the equipment by service personnel either as initial charges (large installation) or to replenish CFC leaked or vented to the atmosphere. In the United States over 80% of refrigerating demand is consumed in the aftermarket for recharging (Copeland, January 1989).

In The City of Winnipeg, the quantity of refrigerant contained in our equipment from the survey results was estimated at 3064 kg (CFC-11, CFC-12 and CFC-502). We use 546 kg (in containers) of CFC-11 and CFC-12 each year to service our equipment in-house. Much more is used however since most of our equipment is serviced by outside contractors. Only Civic Properties and Winnipeg Hydro each have one refrigeration mechanic to service, refill or recharge some of the larger chillers (510 Main Street, 1315 Notre Dame, etc.)

5.4 Solvents

As shown on Chart 1 solvents account for 1.7% of all Ozone Depleting Substances excluding rigid foams found in The City of Winnipeg.

Most of the 170 kg of CFC-113 solvent is used by the Waterworks, Waste and Disposal Lab Services Division as a grease extractor agent. The Waterworks Department presently recycles between 50 to 70% of the solvent (140 kg total) they use for grease extraction.

5.5 Sterilants

As shown on Chart 1, sterilants account for 24.2% of all Ozone Depleting Substances, excluding rigid foams, found in the City of Winnipeg.

A total of 52 containers using a sterilant mixture of 12% Ethylene Oxide and 88% CFC-12 for a total weight of 2827 kg were determined from the survey. This CFC was found in only one location; Central Sterilization Room of King George Hospital.

The amount of CFC-12 in this solution is 2488 kg (88% of 2827 kg).

5.6 Fire Extinguishers

As shown on Chart 1, fire extinguishers account for only 9.6% of all Ozone Depleting Substances, excluding rigid foams, found in the City of Winnipeg.

A total of 42 portable units containing the Bromo-fluorocarbon (Halon) H-1211 (144 kg) and 10 total flood (fixed units) containing H-1301 (847 kg) were determined from the survey.

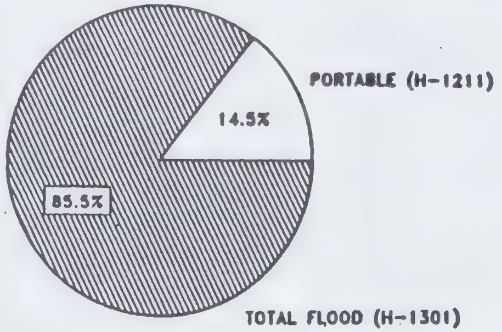


CHART 7-FIRE EXTINGUISHER HALON DISTRIBUTION(991 KG)

The portable units are used in a variety of locations such as in waterworks pumping stations, computer rooms, police training centre, waterworks lab, St. Vital park, on one truck, control rooms, offices, mechanical rooms, sewage treatment plant, etc.

The total flood units are used mainly in computer rooms, archives and two hydro substations.

6.0 OPTIONS TO REDUCE OR ELIMINATE

Options described below basically follow Environment Canada's Report on Options "Preserving the Ozone Layer: A Step Beyond" - April 1989 and where required augmented by other information to address the issue more specific to the City of Winnipeg.

6.1 Rigid Foams

Rigid polyurethane, polystyrene and phenolic foams are produced using CFC-11, CFC-12 or CFC-113 as blowing agents. These types of foams have gained popularity due largely to the favourable economics of insulating with low density foam in buildings, refrigerators, etc.

Very little of the CFCs is emitted during production and its insulating properties are based on trapping as much CFC as possible in the product.

The City of Winnipeg is a "User" and not a "producer" of these foams. It is extremely expensive and difficult to eliminate our present inventory of rigid foam since it would mean replacing 500 refrigerators and ripping apart roofs and walls of many buildings.

To freeze and reduce future use of foam products containing the ozone depleting CFCs in rigid insulation, the following options are available:

1. Use of Alternative Insulation in New or Retrofitted Buildings

A variety of insulation products compete in the marketplace with R-value per dollar as the primary factor influencing sales. Mineral (rock, slag or glass) is the principal alternative to CFC blown rigid foams but in many applications building design changes would be required since foam products have a higher thermal resistance (RSI or R-Value).

For example, a roof insulated with glass fibre instead of rigid foam like polyurethane would have to be about 30% thicker to achieve the same thermal resistance value. For a thermal resistance of 7.04 RSI (R40) the thickness of insulation would be 18cm (7 in.) for the foam and 25cm (10 in.) for the glassfibre.

Cellulose fibre insulation is a good alternative product for sprayed, blown or poured wall and ceiling insulation. Although its thermal resistance per unit thickness is less than foam, it can be applied in thicker quantities to achieve the same insulation level.

An alternate to foam wall sheathing is the use of fibreglass, fibreboard, plywood, gypsum, foil faced laminated board and asphalt board.

Fibreglass or non-urethane foams made without CFC's, supplemented by drywall for fire protection is an alternative to rigid foams for insulating basement walls.

2. Use of Foam Blown with Alternative CFCs

In rigid polyurethane foam, some "soft" CFCs namely HCFC-123 and HCFC-141b are the most likely chemical substitutes for the use of CFC-11. The CFC-12 that is used primarily for frothing may be replaced by HCFC-22 or HFC-134a.

A joint testing program of the Society of the Plastics Industry of Canada and the National Research Council is currently in progress to assess how HCFC-123 and HCFC-141b can be introduced as substitute blowing agents. Commercial quantities may not be available until 1992.

3. New Technology for Refrigerator Insulation

A new technology for refrigerator insulation is "evacuated" or "vacuum" panel insulation. This would eliminate the need for CFC and provide a higher resistance to heat. The Solar Energy Research Institute in Golden, Colorado and the Oak Ridge National Laboratory are presently researching this new technology.

4. Disposal

The CFCs in the rigid foams are "banked" and will not be released unless the foam is broken up. Normally foam removed from buildings are partly broken on site and further broken at landfill with the subsequent release of some CFC's.

The foam insulation in refrigerators is also banked until some of the CFCs are released when the refrigerator is shredded for scrap metal.

To remove rigid foam from buildings and refrigerators without significant breakage of the foam and to store the foam until a suitable disposal method is available will be very expensive and technically difficult.

The trend appears to be not for change but to continue to dispose of these products as we do now. Alternative products and the new rigid foams, when they become available, should be used where possible.

6.2 Flexible Foams

Flexible foams are used in furniture, vehicle seats, carpet underlay and other cushioning material.

Flexible foams are produced using CFC-11 as an auxiliary blowing agent in some applications. Many foams are blown without using an auxiliary blowing agent. In the production of flexible foams, most of the CFC emissions are "prompt"(i.e. they are released quickly within a few hours or days after manufacture).

To reduce or eliminate flexible foams, products produced with the Ozone depleting CFC's the following options are available:

1. Use of Foam Blown with Alternative CFCs or No CFCs

CFC-11 is used only as an auxiliary blowing agent, the primary blowing agent is carbon dioxide. Thirty-five percent of polyurethane foam is blown with CFC-11. Increasing the use of water as a blowing agent, conversion to modified polyols and use of alternative blowing agents such as HCFC-123 or HCFC-141b (commercial quantities may not be available until 1992) are all options.

2. Use of Alternative Products

Use of substitute materials such as natural and synthetic fibrefill is another option. Also the use of high density foam which minimizes the use of CFC-11 is an option except that it will be more expensive and will be harder to accept by consumers since it is not as comfortable as soft foam.

6.3 Refrigeration and Air Conditioning

Refrigeration and air conditioning are used in three major sectors:

- Commercial refrigeration and air conditioning
- Residential refrigeration and air conditioning
- Automobile air conditioning

6.3.1 Commercial Refrigeration and Air Conditioning

The primary CFCs used in commercial refrigeration and air conditioning are:

Substance	ODP	Equipment
CFC-11	1.0	chillers
CFC-12	1.0	air conditioners, chillers, dehumidifiers
CFC-115	0.6	freezers

To reduce or eliminate the CFC's in this area the following options are available:

1. Use of Alternative Refrigerants in New Units

The refrigeration industry is working closely with chemical suppliers in the development and testing of two prime alternative refrigerants:
HCFC-123 (ODP=0.02) to replace CFC-11 and

HFC-134a (ODP=0.00) to replace CFC-12

Tests are presently being performed on these alternatives and once they have passed all tests it is expected that products with these new substances will be available in the next 5 to 10 years. Commercial quantities of HFC-134A will be available to users by late 1992. DuPont projects a price of 3 to 5 times that of CFC-12.

In the meantime, industry, whenever technically and economically possible are switching new units to the so called "bridging substances" (substances that can bridge the gap between now and when the new substances are available).

HCFC-22 (ODP = 0.05) and
CFC-502 (ODP = 0.33)

CFC-502 is a 51/44 mixture of CFC-115 and HCFC-22 and can be used for capacities higher than 1000 tons and low to medium temperature applications (temperatures down to -40^0C at the evaporator inlet). Although not included in the Montreal Protocol this substance is likely to be phased out in the future because of its 0.33 ODP. HCFC-22 can be used for capacities less than 1000 tons and medium to high temperature applications (temperatures -10^0C and up at the evaporator inlet). This substance is viewed as part of the long term solution because of its low ODP (0.05). HCFC-22 provides excellent performance for medium and high temperature refrigeration. However, its use in low temperature applications results in lower performance, higher cost and reduced reliability. Work is being done by Copeland for low temperature HCFC-22 applications and a breakthrough is anticipated.

Copeland Corporation, a major compressor manufacturer, is developing 45 new compressor models and expanding HCFC-22 application ranges to provide replacements for their entire CFC-12 product line. These new products are expected in the spring of 1989 (see Section 5.0 for details).

2. Use of Alternative Refrigerants in Existing Units

Switching refrigerants in existing systems (such as switching CFC-12 systems to CFC-502 or HCFC-22 and switching CFC-502 systems to CFC-22) in most cases will strongly affect operation of major system components such as compressor, controls, expansion valves, pressure actuated valves, controls, etc. Also major system piping changes will be required, system efficiency will be reduced, new leaks can develop because of higher operating pressures and the capacity of the system may change substantially.

HFC-134A has been called the "drop-in" replacement to CFC-12 and could be a suitable replacement once sufficient quantities are produced and testing is completed. According to Copeland, sufficient evidence exists to indicate that

HFC-134A may be an attractive replacement for CFC-12. At present, it causes a slightly lower performance and is incompatible with presently used lubricants that flow within a typical refrigerant system. Theoretically, a loss in capacity from 2 to 12% and loss in efficiency from 0.6 to 5% could be expected. Slightly larger compressors and heat exchangers will be required to compensate for these losses.

3. Recover, Recycle and Re-Use Refrigerant

Recovery and recycling of used refrigerant is feasible but requires a number of conditions to be effective such as:

- refrigeration units that are designed to allow safe and controlled removal of CFC;
- trained and motivated maintenance personnel;
- a network of qualified recyclers;
- recognized product quality standards for recycled CFCs;
- regulations would be required to ensure compliance by dealers and service agents and salvagers;
- it will only be cost effective if the price of recovered refrigerant is close to, or under the cost of virgin refrigerant.

Recovery units are now available that are designed for the commercial, industrial, residential and domestic refrigeration and air conditioning industry. One manufacturer produces a recycling station that is portable and can handle 100 lbs of CFC-12, HCFC-22, CFC-500 or CFC-502 refrigerant at any one time. The station is available now and cost is estimated to be $5,700. Unofficial tests conducted by one manufacturer for automobile air conditioners indicated that recycled CFC-12 refrigerant had a lower moisture content, mineral oil based lubricant and acid content than EPA recycling standards and new CFC-12 refrigerant.

Manufacturers of refrigeration equipment may be reluctant to honour their equipment warranties if recycled refrigerant is used. They may be willing to test the recycled refrigerant to ensure it will not damage their equipment.

Alternatively, the refrigerant can be recovered and sent to companies such as DuPont for purification.

4. Use of Alternative Leak Test Gases

Based on industry practices today, prohibition of the use of CFCs for leak testing is quite feasible. The refrigeration industry is currently installing leak testing facilities which use helium as a leak test gas for smaller size units. Helium testing of large units will be available in the future, in the meantime, HCFC-22 is replacing CFC-12 for leak testing.

For testing of field installation, contract personnel now use either HCFC-22 or nitrogen.

5. Installation of Isolation Valves

Isolation valves can easily be incorporated into new designs to allow servicing of equipment without venting all the refrigerant. Existing equipment can be retrofitted with isolation valves when refrigerant replacement is required.

6. Use of High-Pressure Centrifugal Chillers that Use HCFC-22

This type of unit is commercially available up to a capacity of 1000 tons of refrigeration. The energy penalty of using this type of unit would be a 5 to 7 percent increase in power consumption and possibly more costly control systems.

7. CFC Recovery During Decommissioning

Recovery of CFC during decommissioning of commercial/industrial units is possible, however the recovery/recycle/destruction technique must be addressed. Environment Canada is of the opinion that this should be dealt with at the provincial level.

8. Work Practice

Service, repair and leakage account for major source of the CFC emissions from centrifugal and reciprocating chillers. Leaks on a refrigeration system occur most frequently from vibration transmitted to piping by movement of the compressor, by pressure pulsations as refrigerant is pushed through the piping, poor purge (discharging) systems, valves and fittings and poor servicing practices. Leaks account for most CFC emissions from chillers.

To reduce this leakage substantially several options can be incorporated into industry practices:

- minimizing leaks from purge systems
- improving relief valves
- installing leak detection and warning systems such as a microprocessor based liquid line monitor
- use of vibration isolators at the compressor
- use of more pipe clamps and supports and allowing for pipe expansion
- use of a receiver tank to contain leaked refrigerants from purge systems.

The American Society of Heating, Refrigeration and Air Conditioning Engineers (ASHRAE), a widely recognized professional technical organization that develops industry guidelines, is presently developing workable guidelines to minimize inadvertent losses of CFCs during manufacture, installation, service, and disposal of refrigeration and air-conditioning equipment in the building equipment, appliance and transportation use sectors. These guidelines are scheduled to be released in a draft form by the end of July 1989.

6.3.2 Residential Refrigeration and Air Conditioning

The primary CFCs used in residential refrigeration and air conditioning are:

Substance	ODP	Equipment
CFC12	1.0	Refrigerators, water coolers, refrigerator air dryers, case coolers
HCFC22	0.05	Room and central air conditioners, heat pumps

Note that the HCFC-22 is a soft CFC (ODP=0.05) and is not presently regulated.

Most of the control options described for commercial refrigeration and air conditioning are also applicable to the residential use category with the exceptions of residential air conditioning and heat pumps (contain soft HCFC-22).

To reduce or eliminate the CFC's in this area, the following options are available:

1. Use of Alternative Refrigerants in New Units

Again the use of HFC-134a to replace CFC-12 is a long term solution (5-10 years). Manufacturers are reluctant to switch to HCFC-22 or R-502 for new refrigeration because of technical and economic reasons. The use of Ammonia is another possibility, however its toxicity and flammability are major drawbacks.

2. Separate Refrigerant System for the Refrigerator and Freezer

Known as a "Hybrid Evaporator Concept", this technology involves using HCFC-22 for the refrigerator and CFC-12 for the freezer. This option is presently under study but it is not known when or if units will be commercially available.

3. Recover, Recycle and Re-Use Refrigerants

The issue of CFCs removed from residential appliances are the same on the commercial field but is made more difficult because of the small amounts of CFC-12 in each appliance (0.2 to 0.5 kg) and hence the increased expense of recovery.

4. Disposal

Because disposal accounts for the bulk of emissions of residential refrigerators (refrigerators rarely leak), recovery of

CFC-12 is the best possibility for reducing emissions. CFC are released when refrigerators are shredded before smelting by scrap metal dealers. Recovery would have to be done by dealers, service agents or salvagers prior to final disposal. Regulation would be required and again the Federal Government suggests this would best be addressed at the provincial and municipal level.

6.3.3 Vehicle Air Conditioning

Although vehicle air conditioning is the largest single source of CFC release in North America (these systems are notoriously leaky and need to be refilled frequently), the City of Winnipeg has very few air conditioned vehicles.

CFC-12 (ODP = 1.0) is the exclusive refrigerant used in automobile air conditioners.

To reduce or eliminate CFC-12 used in auto air conditioners the following options are available:

1. Use of Alternative Refrigerants in New or Existing Units

The use of HCFC-22, CFC-502 and HFC-134a are potential substitutes for CFC-12 in auto air conditioners. Because of difficulty in containing the very permeable HCFC-22 and significant re-tooling of airconditioning systems due to its higher operating pressure it is a less desirable alternative or substitute.

Also, because the introduction of HFC-134a will likely occur within 3 years, it is not practical to experiment with these other alternatives.

2. Recover, Recycle and Re-Use Refrigerant

Recovery and recycling of used refrigerant offers the best short term solution to minimize CFC emissions from auto airconditioners. When an auto airconditioner has to be serviced the refrigerant is vented to atmosphere and the unit is recharged. Instead of venting to atmosphere, a recovery and recycling system could be used. Also refer to the previous section 6.3.1.3 Commercial Refrigeration and Air Conditioning - Recover, Recycle and Re-Use Refrigerant.

3. Disposal

When vehicles are discarded, the refrigerant could be recovered by salvagers, however regulations or codes as proposed by Environment Canada in their Draft Proposed Code of Good Practice may be required and be similar to those for the disposal of refrigerators.

6.4 Solvents

Chlorofluorocarbon solvents were developed during the 1950's to clean manufactured parts, particularly in the aerospace and electronics industries. These solvents are presently used in the cleaning of electronic and computer-related equipment, as well as in cleaning various medical and pharmaceutical products. The chemical used is CFC-113 and its advantages relate to its high purity and its compatibility with the materials being cleaned, especially plastics and polyvinyls.

Chlorine based chemicals other than chlorofluorocarbons, which also destroy the ozone layer are methyl chloroform and carbon tetrachloride. These chemicals are not included in the Montreal Protocol. CFC-113 and Methyl Chloroform are used to clean and degrease metal parts, printed circuit boards and semi-conductors and are employed in paint formulations.

Carbon Tetrachloride is used to make CFC's as well as pesticides and dyes.

Solvent emissions result from bath evaporation, solvent carry-out, evaporation of waste solvent and spray evaporation.

The Environmental Protection Agency estimates that over the next century, Methyl Chloroform will account for 35% of the build up of chlorine in the atmosphere.

Environment Canada estimate that there are 2 million kg of CFC solvents used in Canada each year. Of this amount 95% are CFC-113 used primarily in the metal cleaners electronics industry and 5% are CFC-11.

In Winnipeg, the quantity of CFC solvents determined from the survey results (Section 5.4) was estimated at 170 kg. These solvents are composed of CFC-113. No Methyl Chloroform or carbon tetrachloride were found in the survey results. This does not preclude the possibility that they have been used previously or will be used as a substitute in the future.

The solvent sector as a whole is unlikely to be able to make a smooth transition from CFC-113 to a single newly-developed and non-ozone depleting fluorocarbon substitute. The development program for this kind of alternative will not likely provide a substitute in the next five years and may not even do so in the next ten years. Therefore, a mix of solutions should be looked at to bring about an earlier end to the use of controlled CFCs as solvents. Alternative non-fluorocarbon solvents offer a significant potential for reducing the use of CFC-113. However, many of these solvents, such as trichloroethylene, face occupational health and safety barriers. In fact, many of the current uses of CFC-113 are in areas where other solvents were undesirable for precisely these reasons. Under controlled conditions, however, these alternative solvents can replace some uses of CFC-113. The newly developed terpenes (a natural compound derived from citrus fruit rinds) may also be effective. Terpenes do not have major toxicity problems, but they are flammable. The most environmentally safe and worker compatible method of cleaning is to use water as a solvent. It is also important to re-examine performance specifications to determine where cleaning requirements could be reduced without compromising performance.

In this sector, a key feature of the control options to be pursued relates to improved information transfer. Until recently, the cost of using CFC-113 has been so low that many smaller firms have not investigated all potential emission reduction options, although these approaches are well known in larger firms.

In consideration of the foregoing, to reduce or eliminate the ozone depleting solvents the following control options are available:

1. Use of Alternative Solvents

Safe alternatives should be established where possible in consultation with the City of Winnipeg Employee Occupational Safety and Health (E.O.S.H.) and the Purchasing Department. Dupont has introduced new interim products (a) FREON SMT for the electronics cleaning agent industry. FREON SMT reduces the amount of CFC-113 in cleaning machines by about 25%. (b) FREON MCA for the metal cleaning industry. FREON MCA reduces the amount of CFC-113 in cleaning machines by about 37%. These products improve cleaning performance and are usable in existing equipment after minor modifications.

2. Work Practice

Where ozone depleting solvents must be used, codes of practice should be reviewed and measures taken to ensure maximum conservation and recycling of solvents and minimum emissions.

3. Information Transfer

For recommendations 1 and 2 above to be effective, the information resulting from these recommendations should be transferred to users of solvents.

4. Disposal

In conjunction with the Province, requirements for interim storage and/or destruction of ozone depleting solvents should be established.

5. Ban Methyl Chlorofom and Carbon Tetrachloride

The City should urge Environment Canada to expand substances controlled by the Montreal Protocol to include Methyl Chloroform and Carbon Tetrachloride.

6.5 Sterilants

CFCs are used to propel a sterilant gas mixture into a stainless steel chamber for the removal of bacteria from hospital medical devices made of plastic or speciality equipment that would be damaged by use of steam. Air is removed from the chamber and the sterilant, pressurized with the CFC, is introduced for a predetermined period of time and then evacuated. This is followed by a period of airwash for non-flammable sterilant gas. For flammable sterilant gases, carbon dioxide or nitrogen is introduced into the chamber and followed by a period of aeration for further sterilant diffusion.

The gases used by the Municipal Hospital is 12% Ethylene Oxide (EtO) and 88% CFC-12 as the propellant. The Central Sterilization Room in the King George Hospital uses 2827 kg of EtO/CFC-12 with 88% or 2487 kg of this containing CFC-12.

To reduce or eliminate the CFC's used in this application the following options are available:

1. Use of Alternate Propellants

Instead of using the 12/88 mixture of EtO/CFC-12, a 10/90 EtO/Carbon Dioxide mix could be used. However, higher pressures are required and current equipment and lines would have to be replaced.

Another possibility is to replace CFC-12 with HCF-134a (O.D.P. = 0) but this substitute is still undergoing testing and development and will not be ready for 2 or 3 years.

2. Recover, Recycle and Re-Use

It may be possible to reclaim CFC-12 in the 12/88 mixture by using an acid-water scrubber, however no one has tried this yet and it may be economically unattractive.

3. Use of Disposable Equipment

A greater use of disposable equipment to reduce or eliminate the sterilization process is possible, however costs would increase and there could be other disposal problems.

4. Steam Sterilization

Steam sterilization can be used for certain medical instruments that do not require gas sterilization.

5. Use Pure Ethylene Oxide

Another option is to establish a centralized sterilization facility that could service numerous hospitals to maximize the efficiency of gas sterilization and reduce its use. Care must be taken since EtO is highly explosive and a suspected carcinogen.

6.6 Fire Extinguishers

Halon 1211 with an ozone depletion potential of 3 is used in portable fire extinguishers and Halon 1301 with an ODP of 10 is used in total flooding systems. Total flooding systems are used to protect computer rooms, tape libraries, telephone exchanges and valuable historic artifacts since Halon 1301 is not destructive to the protected electronic equipment and is not toxic at the concentrations required to extinguish fires.

To reduce or eliminate Halons the following options are available:

1. Use Alternative Portable Fire Extinguishers

Portable Halon fire extinguishers should only be used for computer rooms and sensitive electronic equipment. A dry chemical extinguisher can be used as an effective substitute.

2. Use of Alternative Agents for Total Flooding Halon Systems

At the present, alternative agents with comparable properties do not exist and the timetable for substitutes with substantially the same properties extends much farther into the future than is the case with CFCs.

Use of Halon 1211 Systems or blends with Halon 1301 is presently being actively pursued. The lower ODP of Halon 1211 systems allows fire protection firms to sell roughly three times more of such systems compared to Halon 1301 systems under the quantity restriction of the Montreal Protocol. Care must be taken though since Halon 1211 is toxic at the concentration required to put out fires. As a result it can only be used in areas that are not normally occupied.

3. Limiting Halon 1301 Systems

Typical Halon 1301 systems protect the rooms that house computer equipment. To the extent that computer equipment can be segregated and housed in smaller compartmentized spaces, smaller fire protection systems using less Halon can be installed. These are referred to as "in cabinet" systems and are being developed by systems manufacturers. Surrounding premises would be protected by non-Halon systems.

4. Discharge Testing

An environmentally acceptable test gas should be used in testing the discharge and integrity of Halon 1301 systems. The Halon Research Institute and the National Association of Fire Equipment Distributors are researching the possible use of Halon 121, HCFC-22, and Sulphur Hexafluoride (SF6) as a fire extinguisher testing agent.

5. Reduce Service Losses, Disposal and Original Equipment Manufacturer Discharges

Manufacturers should reduce their own testing, shipping and filling discharges and invest in recycling. As purchasers of Halon Systems the City of Winnipeg could speed the recycling process by indicating the City will purchase only from firms that recycle their Halon.

6.7 Aerosols

Prior to the ozone depletion theory formulated in 1974, CFC-11 and CFC-12 used as propellants in aerosol products accounted for about 50% of all CFCs in North America. Canada prohibited the use of CFC propellants in hairsprays, deodorants and anti-perspirants in 1980. Prior to 1987, 2 million kg of CFCs used in Canada were aerosols. Today it is estimated this has dropped to only 50,000 kg per year. On January 10, 1989 the Canadian Aerosol Information Bureau confirmed the following to Environment Canada:

- 95% of all aerosol products do not contain CFCs
- aerosol products still using CFCs include electronic solvents, some fragrances, one oven cleaner and some low-user products.

On February 1989, Environment Canada released a draft regulation prohibiting uses of CFCs in the toiletry/personal care category. Consultation is now in progress and a regulatory announcement in the Canada Gazette, Part 1 is expected before January 1, 1990.

Only CFC products deemed essential will be exempted from this regulation. This includes mould release agents, cleaners and solvents products for electrical/electronic equipment, lubricants in mining applications, bronchial dilators, veterinary wound sprays and cyto-spray fixative for microscopic plates.

Together these essential uses listed above use very little CFCs. In the long-term, environmentally acceptable substitutes may be found.

Since the CFCs in aerosols is of such a small quantity and the non-essential uses will be banned within 1 year, use in the City will be miniscule.

The only use identified within the City were aerosols used in the cleaning of electrical/electronic equipment. For these applications, aerosol products may be available in non-ozone depleting forms such as hand pumps and spray bottles, or in forms that do not require spray application.

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Fact Sheet APPENDIX A

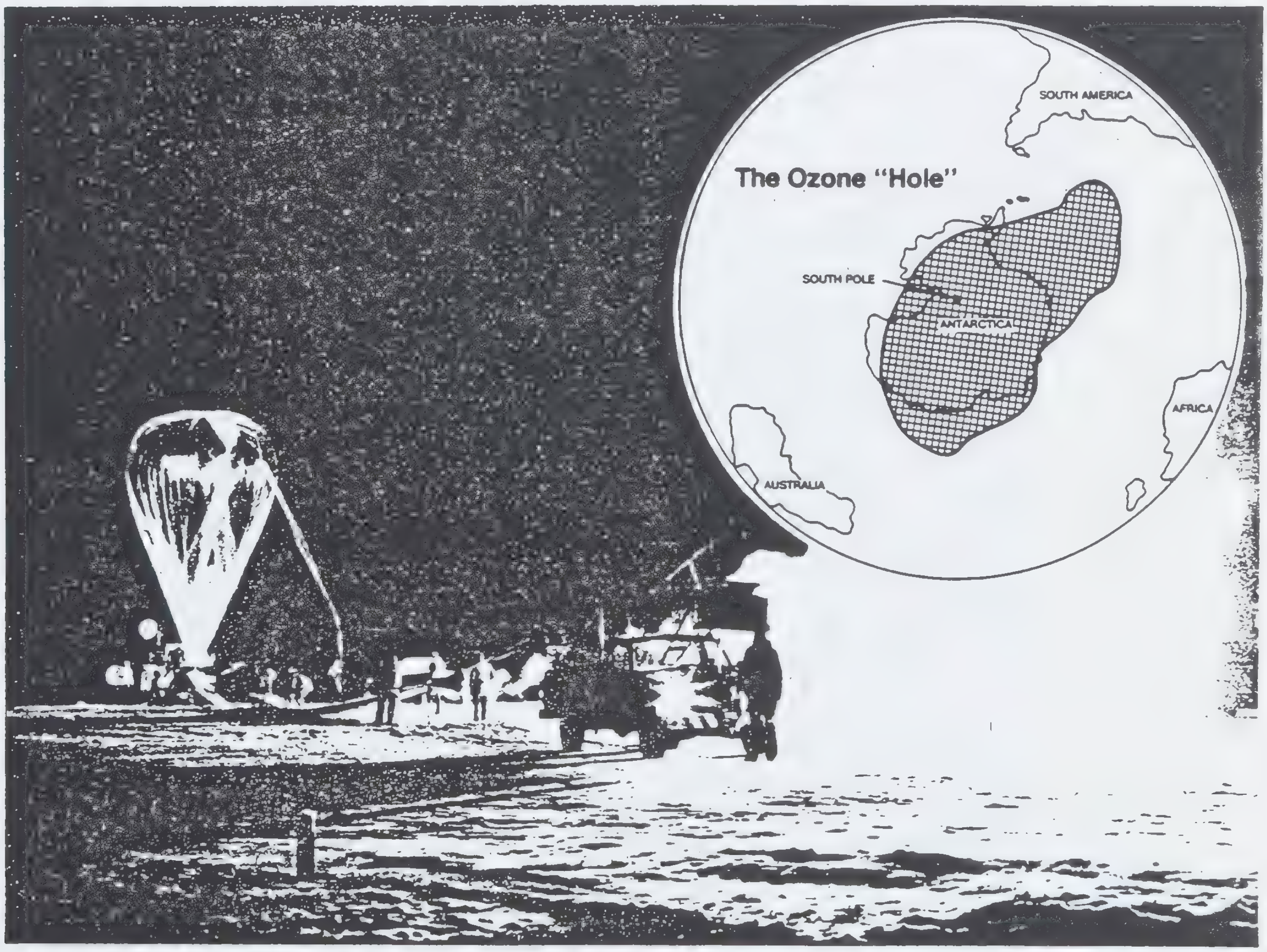
Environment Canada Environnement Canada

Atmospheric Environment Service

Service de l'environnement atmosphérique

Atmospheric Environment Service

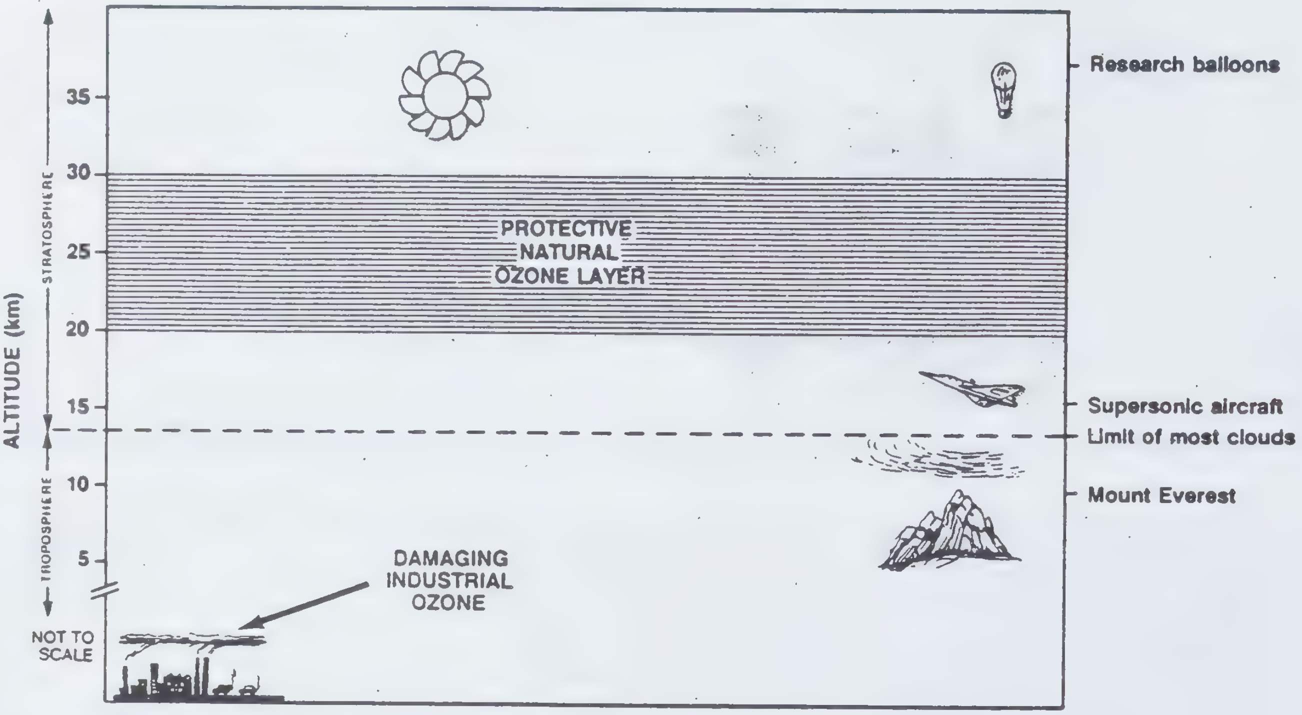
THE OZONE LAYER



A "hole" in the ozone layer over Antarctica has alarmed scientists. Satellite photography captured the hole (shaded area) as it appeared in October, 1986. At the other end of the earth, Environment Canada launches a research balloon to study the Arctic ozone layer (photo).

Human activities have had such an impact on our planet that we are now changing the balance of gases in the earth's atmosphere. There is widespread concern that chemical contamination has reached even the upper layers of the earth's atmosphere and could be threatening the planet's fragile ozone layer — a layer of gases that protects us from the damaging rays of the sun. The ozone layer absorbs much of the sun's ultraviolet rays — dangerous radiation which can cause skin cancer, reduce crop yields and damage aquatic life. Indeed, serious depletion of the ozone layer could affect most life on earth.

Ozone in the Atmosphere



In the upper atmosphere, a protective layer of ozone shields us from the sun's damaging rays, while at ground level this same gas is a serious air pollutant. (Most of the ozone in the upper atmosphere occurs between 15 and 35 km, with the heaviest concentration between 20 and 30 km.)

In recent years, scientific attention has focused on ominous changes in the ozone layer. Over the past decade, the global ozone layer appears to have been slowly depleting. Measurements taken over Toronto, for example, show a loss of 3-4% since 1975. However, it was the discovery of a sudden unexplained "hole" in the ozone over Antarctica that galvanized scientific interest. Here the ozone layer has been observed to thin dramatically during the spring over an area the size of the continental United States. At the centre of the "hole", the ozone layer has decreased by 40% over the last 10 years. Environment Canada scientists are currently studying the Arctic to find out if similar conditions may be developing there.

Scientists do not fully understand these changes, but they are concerned that they could indicate a serious weakening in the earth's protective ozone shield. Although some changes in the ozone layer could be due to natural conditions, increasing evidence now points to chemical contamination from our industrialized society as the root cause.

What is Ozone?

Ozone (O_3) is a pungent-smelling slightly bluish gas, which is a close chemical cousin to oxygen (O_2). The ozone in our atmosphere is spread so thinly that its bluish color would never be noticed. However, one can occasionally catch a whiff of this gas after a thunderstorm. Lightning can literally split apart the air molecules, which re-combine to form a trail of ozone, leaving that sharp "clean" odour which soon dissipates after the storm.

About 90% of the earth's ozone occurs in a natural layer far above the surface of the globe, in a frigid region of the atmosphere known as the stratosphere. Natural ozone can also be found at ground level, however most low level ozone is formed as a result of human activities. Ironically, ozone near the ground is a serious air pollutant, damaging human health and agricultural crops in, or near, large urban areas. Pollution from motor vehicles is the primary cause of high concentrations of ground level ozone. Ozone is formed from car exhaust and gasoline vapours which collect over cities on hot summer days. A thick blanket of smog — in which ozone is a key ingredient — can result.

High Altitude Ozone — The Protective Shield

The ozone layer in the upper atmosphere acts as a natural filter, absorbing most of the sun's damaging ultra-violet rays. Excessive exposure to ultra-violet can cause serious damage to living tissue — these are the rays responsible for sunburn and some forms of skin cancer. Ultra-violet can also suppress the human immune system, leading to greater susceptibility to disease.

These rays also cause skin and eye ageing in humans and other animals and slow the growth of plants. Many agricultural crops are particularly sensitive, including some of the world's most important food crops: wheat, rice, corn and soybeans. Aquatic life near the ocean's surface is very susceptible to ultra-violet damage as well, and excessive exposure could disrupt fish production in the world's oceans. Even industrial aterials, such as plastics and paints, have been shown to be affected, becoming yellow and brittle with lengthy exposure.

Threats to the Ozone Shield

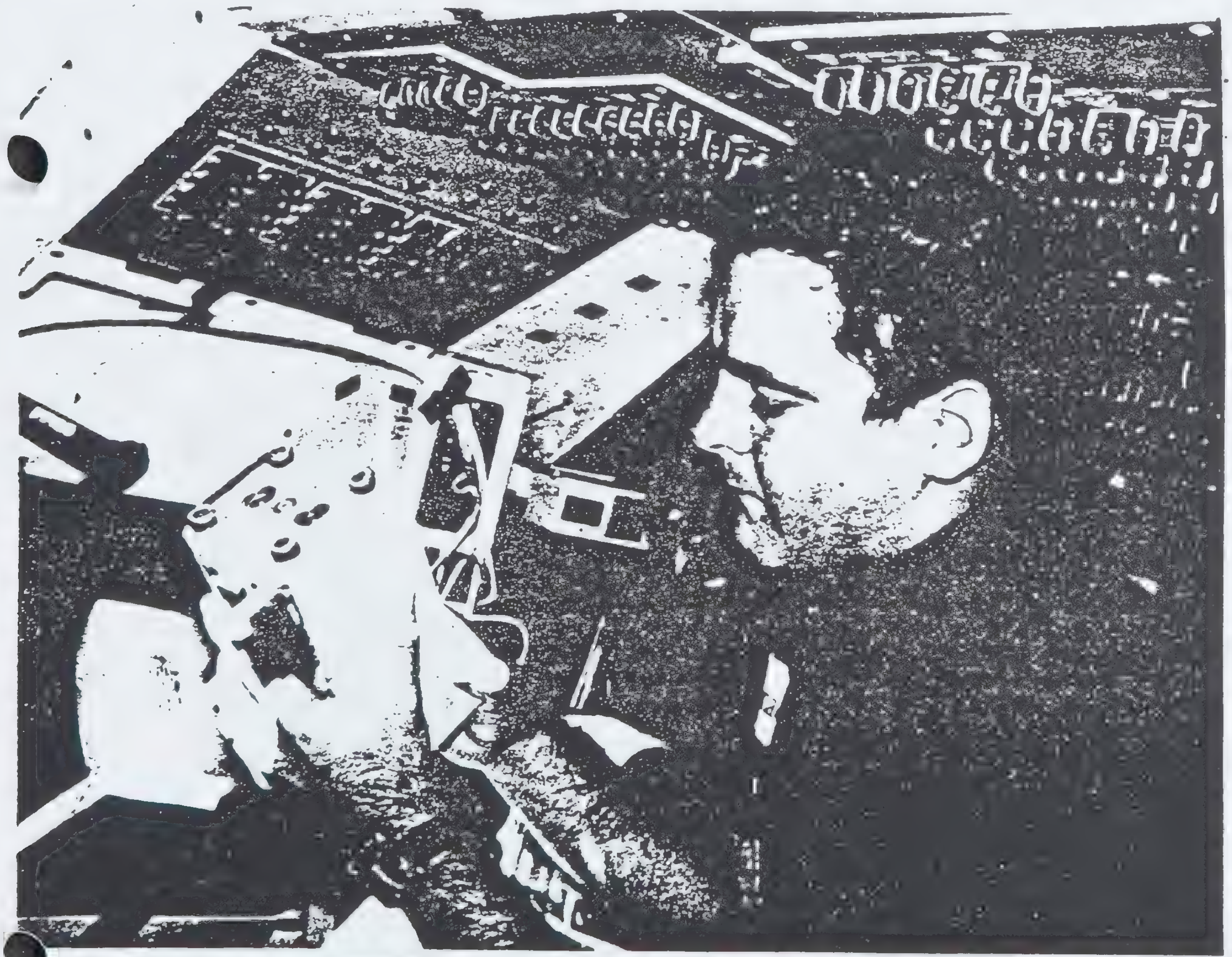
Most of the ozone in the stratosphere is found in a layer about 20 km thick, lying between 15 km and 35 km above the earth's surface. Here in these frigid heights, the ozone is spread so thinly that if it were compressed to ground-level pressure, it would form a layer only 1/3 cm thick. Ozone is a very unstable substance which can be readily destroyed by contact with certain industrial pollutants.

Even 15 km straight up isn't far enough away to escape the effects of human activities. Air pollutants reach the stratosphere by slowly drifting up from the lower atmosphere, or by being injected directly from high altitude aircraft and space vehicles.

Concern about the ozone layer first surfaced in the early 1970s when high altitude aircraft were originally proposed. Fleets of supersonic planes were to fly at high speed through the stratosphere — far above the height of normal aircraft — leaving ozone-destroying exhaust fumes in their wake. However, the new jets proved to be uneconomical and were never widely used. Today the European "Concorde" is the only high altitude plane in regular service. (Other vehicles travelling through the stratosphere, such as space craft and new military aircraft, do not pose a problem at present, as they have not yet come into heavy use.)

In the mid-1970s, attention had switched from advanced high-tech aircraft to the ordinary aerosol spray can. By this time, spray cans had become a tremendously popular item — used by millions on a daily basis to dispense products such as hair sprays and deodorants. The products in these spray cans were mixed with propellants and stored under pressure. When the can was used, the propellant helped to force out the contents.

Industrial chemicals, known as "CFCs" ("chlorofluorocarbons", or "freon gases") were used as the propellant. CFCs are a stable non-toxic group of chemicals which were considered to be environmentally safe. Unfortunately, the environmental effects of CFCs were considered only for the lower atmosphere.



rc Garneau, Canada's first astronaut, studies the ozone layer from outer space during his historic flight in the U.S. space shuttle. He is taking readings th a "sunphotometer", an instrument designed by Environment Canada.

During the 1970s, the use of spray cans released literally thousands of tons of CFCs directly into the lower atmosphere, where they began their gradual drift up into the stratosphere. Although CFCs are very stable in the lower atmosphere, scientists are concerned that once they reach the stratosphere, these chemicals break apart and react with other gases. One of the substances that is produced in this break down process is chlorine. Chlorine has a voracious appetite for ozone — a single molecule is capable of destroying thousands of molecules of ozone.

CFCs are totally man-made and do not occur in nature. They have been found to be very useful in a wide variety of industrial processes, since they are non-toxic and non-flammable. In many cases, CFCs have replaced chemicals which were seen as being much more directly hazardous to human health. CFCs are now used not only in spray cans, but also to manufacture foam insulation and padding, as coolants in refrigerators and air conditioners, and as solvents for cleaning microchips and other electronic equipment.

In the late seventies, steps were taken to reduce the use of CFCs in spray cans. In 1976, Canadian industry agreed to cut this use by half. In fact, this objective was surpassed, partly because of a widespread consumer boycott. In 1980, Canada banned the major propellant uses — in hair sprays, antiperspirants and deodorants. This action reduced the total use of CFCs in spray cans in Canada by 86%. This resulted in an overall national reduction in CFC use of 45%. Similar bans were undertaken in the U.S.A. and Nordic countries in the late 1970s and early 1980s. Europe followed suit with less restrictive regulations. These actions caused a sharp drop in the global release of CFCs.

However the use of CFCs is now rising again. In North America, production of these chemicals is returning to the levels of the early 1970s, as uses other than spray cans become increasingly popular. The current global production of CFCs is also growing steadily. Almost 1/3 of the CFCs used world wide today are still sprayed from cans directly into the atmosphere.

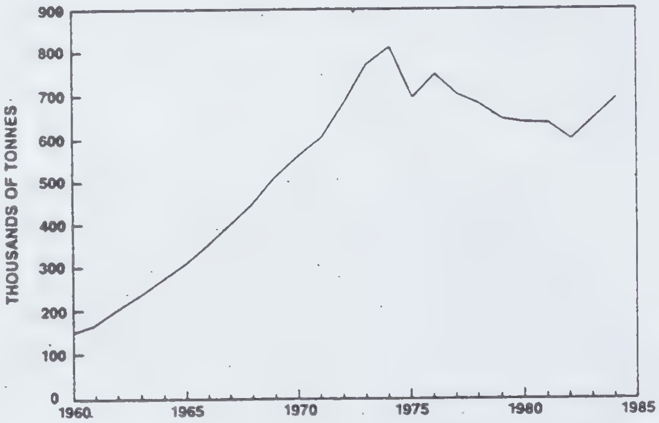
The problem is further compounded by the fact that, once released in the atmosphere, most CFCs remain there for longer than 75 years. Thus virtually all of the CFCs that have ever been released are still in the atmosphere, still drifting slowly up to the stratosphere. At current rates of production and use, roughly 800,000 to one million tonnes of CFCs are added each year to this ever-increasing global pool of ozone-destroying chemicals in our atmosphere. Because of this huge reservoir of CFCs, global action to control these chemicals must be taken well in advance of any evidence of a major depletion of the ozone layer.

However, even small changes in the ozone layer can have significant impacts. Studies show that even a 1% depletion would result in a 4% increase in non-melanoma skin cancer. Although this form of skin cancer is rarely life-threatening, it can be highly unsightly.

Scientists strongly suspect that an increase would also occur in malignant melanoma — a rarer but often fatal form of skin cancer. The world's major food crops would be affected as well. Although much research remains to be done, preliminary studies on soya beans indicate that a 1% depletion of ozone would result in a 1% reduction in crop yield.

There is also concern that CFCs may be contributing to another important environmental problem: global climate change. Through a process known as the greenhouse effect, the world climate is expected to become warmer, with accompanying shifts in rainfall patterns and increases in sea level. CFCs and carbon dioxide are expected to be major contributors to this greenhouse effect. Although CFCs are far less abundant than carbon dioxide, their effect on climate, molecule for molecule, is about 10,000 times more powerful. If CFC production and use continues at current rates, the greenhouse effect of CFCs could equal that of carbon dioxide within 50 years. Even today CFCs contribute 10-15% of the current greenhouse effect.

Global Production of CFCs



The world production of CFCs, which threaten the ozone layer, is increasing again, after a sharp decrease in the early 1970s, when their use in spray cans was restricted.

Can the Threat be Reduced?

Substitute chemicals and improved methods of handling CFCs could greatly reduce the threat to the ozone layer.

CFCs are widely used as coolants in refrigerators and air conditioners. Although the chemicals are sealed inside the appliances, they can escape during filling, servicing, or the eventual disposal. Automobile air conditioners are particularly susceptible to leakage, as many of the joints and seals must be flexible to accommodate the movement of the vehicle.

CFCs are also heavily used to manufacture foam products — both soft foam padding, and rigid foam used for packaging and home insulation. Here the chemicals are used as a gas to "blow" the foam. During the production of these products, large amounts of CFCs are released to the atmosphere. The manufacture of rigid foam insulation is growing rapidly, as this material is now commonly used to insulate homes and to produce foam food containers, including egg cartons, meat trays and fast food containers.

In recent years, CFCs have also become very popular as solvents for cleaning microchips and electronic components.

In most of these uses, opportunities exist to greatly reduce both the amount of CFCs used and the quantity that is released to the atmosphere. CFCs can be removed from discarded cooling systems, recaptured during the production of foams, or recovered from used solvents. The chemicals can then be cleaned and re-used. Such procedures are now being carried out only on a very limited basis in certain industries, since, in most cases, such recycling is seen as uneconomical.

In some instances, the use of CFCs themselves can be questioned. Butane and other similar material have proven to be effective substitutes in spray cans. Food containers could be made from other materials, such as paper and cardboard. Do we really need to eat hamburgers out of foam boxes?

Substitute chemicals have been developed for CFCs which present little or no threat to the ozone layer. These include fluorocarbons (CFC-like chemicals which contain no chlorine) and CFCs which break down rapidly in the lower atmosphere. Unfortunately, these chemicals are more expensive than the CFCs now in use, and are not likely to come into widespread use until existing CFCs are banned.

A Hole in the Sky?

Scientists have detected a disturbing thinning of the ozone layer over the Antarctic during the polar spring (in September and October). This "hole" appears to be spreading steadily, becoming wider and thinner over the past decade. In recent years, the ozone has thinned by about 40% over an area the size of the continental United States. (This represents a decrease of about 4% per year). This "hole" lasts for only about two months each year and then fills in.

Scientists are now actively searching for the cause of the ozone hole. Although much more research is needed, preliminary investigations have focussed on three possible causes: 1) pollution collecting at the south pole, 2) possible changes in the earth's wind and weather patterns (perhaps due to the "greenhouse" effect), or 3) variations in the Antarctic climate due to natural causes, such as sun spot cycles.

Recently a minor thinning has been reported in the ozone over the Arctic. This thin spot, centered over the Spitsbergen Islands, north of Norway, is much less pronounced than the "hole" in the Antarctic, with a decrease of about 1.5-2% per year and covering an area only 1/3 the size. Environment Canada scientists have intensified their studies of this area. However, small decreases such as this may well be within the range of natural fluctuation.

Keeping Watch on the Ozone Layer

The ozone layer is truly a global concern. The international scientific community is keeping close watch on our protective shield through a world-wide network of measuring stations, co-ordinated by the World Meteorological Organization. Environment Canada plays a leading role in this system by operating the World Ozone Data Centre, which has collected over 20 years of data from the global network and ensures its availability to the world's scientists. Such information is essential for understanding long term change in the ozone layer.

Keeping tabs on a layer of invisible gases 25 km above the earth's surface is no easy task. Scientists at Environment Canada use a variety of techniques to study our protective shield. Huge helium-filled balloons — some as tall as 28 meters — carry measuring instruments to heights of up to 40 km. High altitude rockets are also used. Measuring instruments have also been developed that are so sensitive they can take readings of the gases in the stratosphere from the surface of the earth, or from outer space.

Marc Garneau, Canada's first astronaut, studied the ozone layer from outer space during his historic flight in the U.S. space shuttle in 1984. He used a Canadian instrument known as a sunphotometer to take readings of ozone and other gases in the earth's atmosphere.

In recent years, satellite measurements have also proved to be a most useful tool, by providing a comprehensive global overview of the ozone layer. Maps developed from satellite data clearly show fluctuations in the layer and could be a key factor in understanding the Antarctic ozone hole.

The global ozone measuring network relies mainly on ground-based instruments which measure the height and thickness of the ozone layer from the surface of the earth. As part of this network, Environment Canada operates stations at Toronto, Edmonton, Churchill, Goose Bay (Labrador) and Resolute (N.W.T.).

Environment Canada's Atmospheric Environment Service has perfected the design for a modernized ground-based ozone measuring instrument — the Brewer Ozone Spectrophotometer. This is a unique, state-of-the-art instrument which is now being used to upgrade the global network of measuring stations. The new instrument has proved to be a valuable aid to scientists as it makes measurements easier and more precise. In the near future, this instrument is scheduled to fly on board the U.S. space shuttle mission, to measure the ozone layer from outer space.

A Global Commitment

Canada has become a world leader in encouraging international protection of the environment by playing a key role in the development of a global agreement to safeguard the ozone layer. The 1985 Vienna Convention for the Protection of the Ozone Layer, developed under the United Nations Environment Program, is truly a "first" for the safeguarding of both the environment and human health.

The convention established a framework which will protect the earth's upper atmosphere through cooperative international efforts. It also provides for international cooperation in scientific research and information exchange. Canada signed the agreement in 1985 and was the first nation to formally ratify it in June 1986. To date, 28 countries have signed the convention.

Environment Canada is now working with other nations to develop international pollution control standards to limit the release of ozone-destroying substances. Canada is advocating for a long term strategy — one that would see both the production and release of CFCs decline, and one that would control other ozone modifying substances as well. (Other chemicals, such as halons, which are used as fire extinguishers and fire supressants may also pose a threat if their usage increases). These standards will be adopted as a protocol to the Vienna Convention at an upcoming conference in Montreal.

Throughout the lengthy negotiations to develop both the Vienna Convention and the subsequent pollution control standards, Canada has played a key role. It was a Canadian proposal presented in 1986 which broke a serious deadlock in the negotiations and paved the way for the development of the final pollution control agreement, in which Canadian contributions are expected to play an important role. In recognition of Canada's efforts the United Nations Environment Program has accepted Canada's offer to act as the host country for the signing of this vital international agreement.

Although much work remains to be done, these controls will truly represent a major landmark in our earth's history. They will represent the first real international action to protect the global environment. They will also mark the first concerted international effort to prevent an environmental problem, before it reaches the crisis stage. Hopefully, the Vienna Convention for the Protection of the Ozone Layer will become a global turning point and a model for continued world-wide cooperation to safeguard our planet.

For more information contact:

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(416) 667-4551

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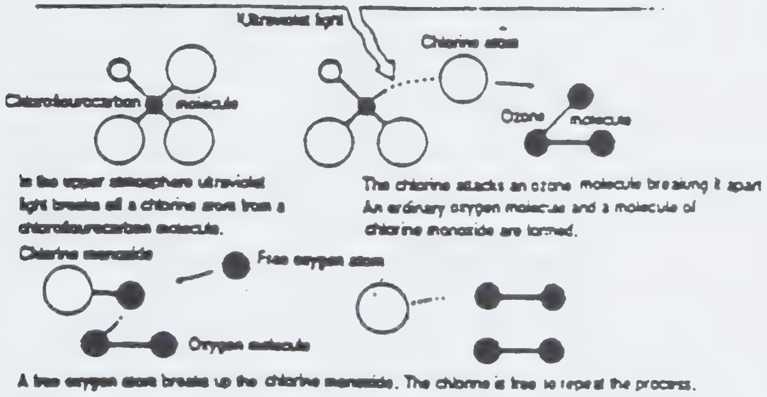
APPENDIX B

HOW CFCs AND HALONS DESTROY OZONE

CFCs and Halons remain in the atmosphere for decades, slowly migrating upwards without reacting with any other chemicals. In the atmosphere, the lower atmosphere, along with other chemical compounds, they absorb infrared radiation radiated from the earth's surface. This heat is trapped to create a "greenhouse effect," which scientists predict will have extreme adverse environmental consequences, ranging from sea level rise, which will flood and destroy coastal zones, disruption of agriculture due to shifts in global temperature and rainfall patterns, to the extinction of certain plant and animal species. When CFCs and halons reach to the stratosphere, the upper atmosphere, they finally break down to release chlorine, which in turn causes ozone destruction. **One chlorine atom can destroy as many as 100,000 ozone molecules before it is rendered inactive or removed from the atmosphere.**

Research has shown that when CFC (or halon) molecules react with UV light in the stratosphere, they break down, freeing chlorine (or in the case of halon molecules, bromine), fluorine, and carbon atoms. Following is a schematic diagram of the chemical reactions. When a chlorine atom meets an ozone molecule, it "steals away" an oxygen atom to form chlorine monoxide and an ordinary oxygen molecule, thereby destroying the ozone molecule. If the chlorine monoxide molecule meets another oxygen atom, the two oxygen atoms combine, freeing the chlorine atom to meet yet another ozone molecule. One chlorine atom can destroy as many as 100,000 ozone molecules before it is rendered inactive or removed from the atmosphere.

How Ozone Is Destroyed



In the upper atmosphere ultraviolet light breaks off a chlorine atom from a chlorofluorocarbon molecule.

The chlorine attacks an ozone molecule breaking it apart. An ordinary oxygen molecule and a molecule of chlorine monoxide are formed.

A free oxygen atom breaks up the chlorine monoxide. The chlorine is free to repeat the process.

4a)

OFFICE OF THE CHIEF ADMINISTRATIVE OFFICER

MEMORANDUM

****

TO: Mr. T. Gill
Acting Commissioner of Engineering
Department of Engineering

YOUR FILE:

FROM: Mr. W. M. Carson
Chief Administrative Officer

OUR FILE:
PHONE: 546-4263

SUBJECT: Administrative Support for
Chairman's Advisory Committee
on Environmental Issues

DATE: November 14, 1990

I have reviewed the current situation with respect to the above advisory committee and concur that there is a need for a staff member to provide administrative support and coordination. Accordingly I am proposing that you hire the appropriate person on a one year contract basis. Financing is to come from available funds from within your budget. If no funds are available in your budget, you may wish to fund this position equally from the Water, Sewer and Solid Waste reserves.

You will, of course, have to take this matter to the next Engineering Services Committee and Finance and Personnel Committee for their approval.

I have discussed this matter with the Finance Department who are agreement with this proposal.

mac

C.C. Reg Whynott, Regional Chairman
John Prentice, Chairman - Environmental Advisory Committee
Cecil Mascaranhas, Finance Department

THE REGIONAL MUNICIPALITY
OF HAMILTON - WENTWORTH

4b)

Office of the Chairman

November 20, 1990

Mr. P.J. Earle
Director
Communications & Public Affairs
Dofasco Inc.
P.O. Box 2460
Hamilton, Ontario
L8N 3J5

Dear Peter:

Thanks very much for the video and other materials which you were kind enough to forward to me recently.

As you know, waste management is a key part of our current programs here at the Region and recycling is a major component of our program.

I am taking the liberty of forwarding your materials to Councillor John Prentice, Chairman of our Environmental Issues Sub-Committee, and if he chooses to follow up with your group he will do so independently.

Thanks again Peter for your interest and support!

Sincere Best Regards,

Reg

R.J. (Reg) Whynott
Regional Chairman

cc - ✓Councillor John Prentice

Encls.

P.O. Box 910, Hamilton, Ontario L8N 3V9
119 King Street West, 15th Floor
Tel: (416) 546-4200 Fax: (416) 546-2340

CTRC BULLETIN

CANADIAN TINPLATE RECYCLING COUNCIL
News Letter

CTRC
Published by the Canadian Tinplate Recycling Council in support of recycling in Canada.

Long-Term Support for Recycling in Ontario

Because steel food and beverage cans had been recycled by steel mills and because recycling was becoming an important national priority, Canada's tinplate producers-Dofasco and Stelco - formed the Canadian Tinplate Recycling Council in 1983.

The goal of the Council is to ensure that all collected steel food and beverage cans are recycled in the steelmaking process. To achieve this goal, CTRC members provide a consistent, long-term market for the collected cans, thus supporting the "Multi-Material" Blue Box collection system.

The CTRC's current Manager, John Paulowich notes that all types of steel are totally recyclable and tin-plated food and beverage cans are no exception. "Even the bi-metal beverage cans fit right into the system," he adds.

Steel makers have been using scrap steel for decades. Scrap steel is a necessary raw material in the steelmaking process. As the Blue Box collection system continues to expand across Ontario, Canada's tinplate producers will be able to consume the tonnages collected. There is no limitations on the steel mills' ability to absorb more tons of steel food and beverage cans.

Thanks to the great success of the Blue Box multi-material collection system, recycling is becoming a household word in more and more communities across Ontario. Recycling is not simply a new way to handle waste - it's also an important way for people to relate more positively to the planet we all share.

Canada's tinplate producers, through the CTRC, are committed to long-term participation in the recycling effort.

Another CTRC Initiative

One current CTRC initiative in support of the Blue Box Collection System is our effort to help curbside collectors increase their revenues by densifying steel food and beverage cans before shipping them to the steel mills.

The net tons per load means higher revenues because the mills pay $90.00 a ton for baled (densified) cans verses $70.00 for unbaled cans. What's more, there will be a savings in the cost of freight. After the food and beverage cans have been baled, the curbside collectors can deliver more weight per shipment, so their delivery cost per ton is reduced.

This freight savings and the extra $20.00 per ton for baled cans is helping to make densification equipment affordable for curbside collectors.

The CTRC is helping by gathering information on the cost of densification equipment, and locating available funding through the Ontario Ministry of the Environment and OMMRI. We'll provide this information to all curbside collectors and municipalities.

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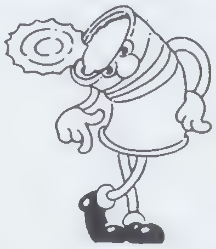
DIRECT FROM THE DIRECTOR

John Paulowich
Manager/Director
Canadian Tinplate
Recycling Council

Success Breeds Success

It's good news for everyone that Ontario's Blue Box collection program continues to enjoy outstanding acceptance by more and more households throughout the province.

The CTRC believes that this program is an important and essential part of the province's effort to combat the problem of nearly full landfill sites. The Minister of the Environment's stated goal is to reduce by 50% waste moving to landfill sites by the year 2000.The multi-material Blue Box collection system has already proven its ability to significantly conserve landfill through recycling. And there is lots of potential to broaden the range of items collected through this system.



The Cans That Also Can

For most people the empty can that most readily comes to mind when they think of 'recycling' is the beverage can. The fact is that more food cans are recycled than beverage cans.

That's not so surprising, really, when you reflect that the steel can is one of the most widely-used containers in the world. And with good reason. It's strong, durable, safe, economical and totally recyclable.

The householder doesn't have to do anything special to food cans to make them suitable for recycling. They don't have to be flattened.

And the label can stay on.

The can doesn't even have to be rinsed out (although most people do this to avoid odours from left over food particles).

Steel can lids are also recyclable. An easy system is to save all lids in one can until it is full. Then that can along with loads of lids goes into the Blue Box along with the other food and beverage cans.

To the CTRC's member's, it makes no difference whether the steel can originally held a soft drink, juice, pet food or 'people' food. They're all steel scrap for these steel mills - and , at $90.00 a ton for baled cans, a significant contributor to the revenues generated by the multi-material collection system.

An Attractive Thought

The magnetic quality of steel is a natural plus for a multi-material recycling system.

The reason: industrial magnets are able to easily 'pluck' steel food or beverage cans from the wastestream.

As a reminder of how well steel cans fit into the multi-material collection concept, we've produced refrigerator magnets that feature cartoon can characters. Besides looking good on the fridge, they're an easy-to-spot reminder to recycle steel food and beverage cans.

If you'd like to receive your magnets (and they're free, incidentally), **just give us a call at (416) 521-1375.**

The Canadian Tinplate Recycling Council

Steel Can Recycling

Questions and Answers

What is the Canadian Tinplate Recycling Council?

The Canadian Tinplate Recycling Council (CTRC) is a joint venture of Canadian tinplate producers Dofasco and Stelc

What is the Aim of the Canadian Tinplate Recycling Council?

The CTRC supports the recycling of tinplated steel Food and Beverage cans through the "Multi Material **Blue Box** collection system in Ontario.

As recycling increases across Canada, the CTRC will ensure that all collected Food and Beverage cans are used in th steelmaking process resulting in new steel products.

How many times are steel Food and Beverage cans Recyclable?

Steel is infinitely recyclable, Food and Beverage cans are no exception.

When Food and Beverage cans are recycled in a steel mill, they are not only used to produce more steel for cans, bu also other types of steel to make cars, refrigerators, furniture and other products.

What can be done to increase the collection of Food and Beverage cans?

Simply put all of your Food and Beverage cans into the **Blue Box**.

Our Blue Box system is one of the best ways to collect recyclable goods. Now is the time for households to include **mor** of their Food and Beverage cans in the Blue Box.

What has to be done to Food and Beverage Cans before putting them into the Blue Box?

Beverage cans are acceptable with no preparation.

Food cans do not need to be cleaned or delabelled unless the householders preference is to minimize the smell due t the bits and pieces which usually remain in the can. The lid from a food can is also recyclable and should be safely tucke back into the empty can.

Cans **do not** have to be flattened.

Are steel Food and Beverage cans a raw material to Canadian steel producers?

Yes! The Canadian tinplate steel producers have invested billions of dollars over the past decade in order to install th best steelmaking technology in the world. This has resulted in more and better steel being produced with less ste scrap generated.

This means that recycled Food and Beverage cans **are needed** as scrap to make new steel.

PRINTED ON RECYCLED PAPER

Is a Food can really a "Tin Can"?

No! A Food can is made from flat rolled steel which has a tin coating applied to its surface. The tin protects the st while providing a clean and shiny interior which is able to be processed and sterilized to hold a variety of foods.

Does the aluminum on the top of the Steel Beverage Can get recycled?

The entire Beverage can is used in the steelmaking process. The aluminum end does not contaminate our produ

How long have steel Food and Beverage cans been used as part of the Steelmaking process?

Steel Food and Beverage cans collected from municipal waste have been used for over a decade by the members of t CTRC, Stelco and Dofasco. This dates back prior to the Blue Box collection system being established in Ontario a illustrates the early involvement of these mills in the recycling of steel recovered from households.

The CTRC and its member steel producers have lead the North American Steel Industry in the recycling of tinplat steel Food and Beverage cans collected from municipal waste.

How much material is diverted away from Landfill or Incineration when Food and Beverage cans are Recycled?

In the past steel cans have made up, 5% of all "garbage". Every pound that is recycled results in less material to o landfill sites. Since 1986 over ten million cubic feet of landfill has been saved by recycling Food and Beverage ca During 1990, the trend indicates that an additional seven million cubic feet will be saved.

Steel cans have been incinerated. The only impact on the can involved the burning of the label and the remnants the contents. Steel cans do not burn when incinerated with household solid waste.

Are the Canadian Tinplate Producers helping the Curbside Recyclers become more efficient?

The profitability of the Curbside Collection System will result in the continued recycling of Food and Beverage ca Transportation plays a very important part in staying profitable. To help first time recycling operations, a freig subsidy of $15.00 per net ton is paid by the Canadian Tinplate Recycling Council.

In addition, to help the recyclers reduce their freight cost, a program has begun to fund densification equipment su as mini balers which produce a steel brick approximately one foot square. This has lead to a two price system. Current loose cans are at $70.00 per net ton and densified cans are $90.00 per net ton, F.O.B. delivered the mills.

How many Food and Beverage cans are the Canadian Tinplate Producers able to use?

All steel Food and Beverage can collected are recycled by the mills.

Based on the tonnage of steel cans collected through the Blue Box system, how many Beverage cans would this amount to?

Since 1986, we estimate that the equivalent of over one and half **billion** Beverage cans have been collected fr participating households in Ontario.

The following representatives are available to provide additional information:

Canadian Tinplate Recycling Council
John A. Paulowich
P.O. Box 2030
Hamilton, Ontario L8N 3T1
(416) 521-1375

Dofasco Inc.
John W. Hamilton
P.O. Box 2460
Hamilton, Ontario L8N 3J5
(416) 544-3761

Stelco Steel
John M. Leskew
P.O. Box 2030
Hamilton, Ontario L8N 3T
(416) 528-2511

Published by the Canadian Tinplate Recycling Council in support of recycling in Canada,

Multi-Material Collection a Key Advantage of the Blue Box System

Ontario's Blue Box program has been highly successful in collecting the targeted recyclable materials: glass, steel, aluminum, plastic and newspapers.

Since the Blue Box program is a multi-material program, each material supports the other in terms of generating money to help pay for the costs of the collection system. In other words, multiple materials means multiple revenue sources. This is an important benefit of the Blue Box system, particularly in light of increasing pressures on municipal tax revenues due to tightening purse strings at the provincial level.

An Extra 17 Million Cubic Feet of Landfill Site Capacity

Since 1986, over ten million cubic feet of landfill site capacity has been saved by recycling food and beverage cans. During 1990, the trend indicates that an additional seven million cubic feet will be saved.

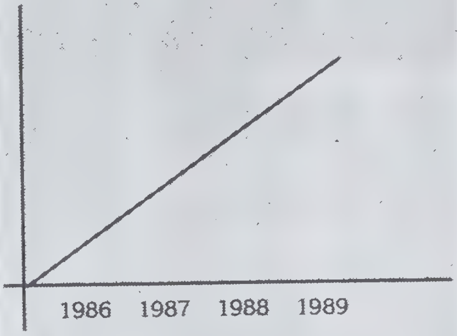
A Strong And Growing Program

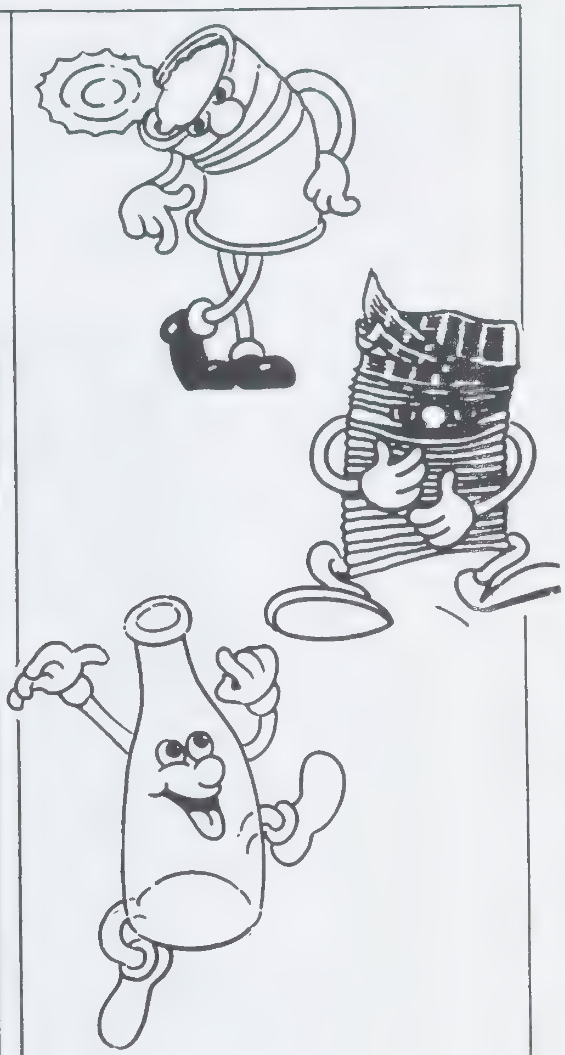
Ontario homeowners have solidly supported the Blue Box program right from its start in 1986.

Today, participating households range from Windsor to Ottawa and Niagara Falls to Dryden.

Multi-material recycling is available to over 60% of the households in the province.

In 1989, the Blue Box program diverted 244,000 tons of material from Ontario landfill sites.





See You There

The **CTRC** participated in the very successful Association of Ontario Municipalities conference in August.

We'll also be at the annual conference of the Recycling Council of Ontario, which will be held at the **Caboto Club in Windsor, from October 14th to 17th**.

The CTRC booth offers a range of informational materials on the recycling of steel food and beverage cans. Booth visistors will be able to view a new videotape outlining how food and beverage cans are used as raw materials in the steelmaking process. We also have our new brochure and information sheets. A complimentary copy of our videotape is also available.

The power of one.

Thanks to enthusiastic response from the individual householder, the multi-material Blue Box collection system is now a major help in reducing the flow of waste to landfill sites in many parts of Ontario.

What's more, the Blue Box system offers plenty of potential for further significant reductions in the volume of waste targeted for landfill sites.

For more Information On the Recycling of Steel Food and Beverage Cans Please contact:

The Canadian Tinplate Recycling Council
John Paulowich
100 King Street West
P.O. Box 2030
Hamilton, Ontario
Canada
L8N 3T1

Fax	(416) 577-4503
Phone:	(416) 521-1375

Printed on Recycled Paper

IS THERE A MARKET FOR STEEL CANS?

The answer is yes. Steel mills buy steel cans directly from the various recyclers and work closely through the CTRC with OMMRI and other recycling organizations.

In addition, detinning companies are also interested in steel cans.

CURBSIDE COLLECTION

The CTRC supports the "Blue Box" system and will assist wherever required to ensure all steel cans are returned for recycling.

WHY AREN'T USED STEEL CANS WORTH AS MUCH AS ALUMINUM CANS?

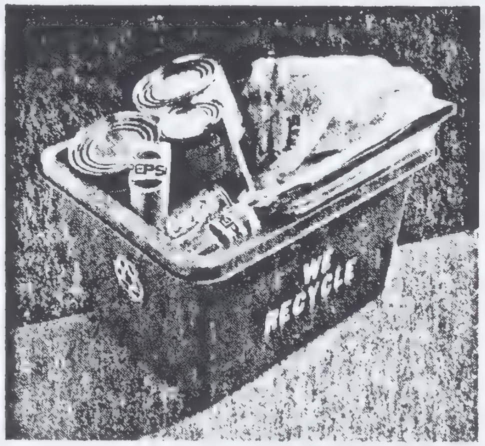
Steel cans cost less to produce than their aluminum counterparts.

Steel is made from domestic raw materials - coal, limestone and iron - that are less expensive than the materials required to make aluminum.

Making steel consumes less energy than making the same amount of aluminum. 244 million BTUs are required to make a single ingot of aluminum; for the same volume of steel, one-third the energy is used. When comparing weight, steel takes 10 times less energy to manufacture.

Steelmaking requires only 35 gallons of water compared to the approximately 1,000 gallons of water that are used to make a single pound of aluminum.

Because an aluminum can costs more to make than a steel can, a recycler will pay more for aluminum scrap.



For additional information on Steel Can Recycling, please contact the following:

John A. Paulowich
C.T.R.C.
P.O. Box 2030
Hamilton, Ontario
L8N 3T1
(416) 521-1375

or

John W. Hamilton
Dofasco Inc.
P.O. Box 2460
Hamilton, Ontario
L8N 3J5
(416) 544-3761

or

John M. Leskew
Stelco Steel
100 King Street West
Hamilton, Ontario
L8N 3T1
(416) 528-2511

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Recyclable
Steel

STEEL CAN RECYCLING
Canadian Tinplate Recycling Council
100 King Street West, P.O. Box 2030
Hamilton, Ontario L8N 3T1
(416) 521-1375

Steel Can Recycling Facts

Member Companies
Dofasco Inc.
Stelco Steel

STEEL INDUSTRY RECYCLING HISTORY

For well over fifty years, the total steel recycling rate in North America has been over 50%, reaching 66% in 1988. This remarkable achievement stems from the fact that recycled products or "scrap" have been incorporated routinely into the steelmaking process as an essential raw material. Traditional scrap consists of "home" scrap, which is steel recycled from the mills own process, "prompt" scrap, which is steel recycled from fabricating systems, and "obsolete" scrap, which is recycled from steel products.

Today steel mills use more scrap than ever in the steelmaking process. As the steel industry scrap needs have increased, the volume of scrap available to the mills has declined. Technical advancements, such as continuous casting and statistical process control have made the steelmaking and fabricating processes even more efficient; consequently, there is less "by-product" and therefore less scrap available for the steelmaking process.

Steel is the most recycled material today and the tonnage is more than twice as much as all other materials combined. And while all steel packaging is already being recycled, the Canadian Tinplate Recycling Council is actively working to dramatically boost this quantity in the months ahead.

ARE STEEL CANS RECYCLABLE?

Yes! All steel cans are recyclable. Steel food and beverage cans are a part of the municipal solid waste stream. Steel can recycling in all communities is part of the municipal solid waste management solution.

WHY SHOULD STEEL CANS BE RECYCLED?

Steel cans are an important component of community recycling efforts and are an important source of revenue in the "Blue Box" infrastructure.

Since steel food and beverage cans are 100% recyclable, they are essential to recycling and recovery operations.

HOW ARE MAGNETS USED IN STEEL CAN RECYCLING?

Steel food and beverage cans are the most easily collected material in any recycling program because they are magnetic.

One pass by a strong magnet separates steel cans automatically from other items, without the manual sorting most other materials require. Many recycling centers are already equipped with magnetic belts that separate steel from aluminum cans.

ISN'T TIN A PROBLEM FOR STEEL MILLS?

Tin was and still is considered a residual in steelmaking. That has not changed. But the mills now see it as an impurity with a limitation which must be accommodated, not an impurity which must be excluded in total. This limitation concept permits the industry to use a significant amount of tin coated material when spread over a year's production.

And, of couse, tin coatings are much lighter than they were in the past. In the past decade, the average amount of tin on a can has been reduced by up to 50 percent.

HOW ARE WE GOING TO REACH OUR GOALS?

To reach waste reduction and recycling goals, comprehensive solid waste management programs must include steel food and beverage can recycling. Recycling all packaging materials, including steel cans dramatically reduces the amount of waste that must be incinerated or landfilled.

Recycle your steel cans. They are easy to collect, separate and recycle. Recycling steel saves natural resources and energy, and promotes a healthy environment.

WHAT ABOUT BI-METAL BEVERAGE CANS?

In the steel mills, the bi-metal can has never presented a problem. Any coatings, lacquers, or other minor contaminants on cans are burned off in the furnace.

AREN'T FOOD CANS A PROBLEM?

Food cans no longer have to be delabelled, and the ends do not have to be cut off. Most people will rinse their food cans because they don't want soiled cans in their kitchens, garages, or backyards between curbside pickups.

WHAT ARE THE PROCESSING REQUIREMENTS?

General specifications for steel can scrap are available by calling the CTRC.

The householder needs only to place their steel cans in their 'Blue Box'.

THE CORPORATION OF THE TOWNSHIP OF GLANBROOK

P.O. BOX 130 MOUNT HOPE, ONTARIO L0R 1W0 TELEPHONE 679-4121

4c)

November 7, 1990

Ms. D. Giroux
Task Force Member
Task Force on Affordable Housing

Dear Ms. Giroux:

Re: Suggestions to Council on Recycling

Thank you for your interest in recycling to save the environment.

At the meeting of the Task Force on Affordable Housing we supplied disposable foam cups which were classified as "environmentally friendly". We realize that a set of dishes would be better but we are a small community and manpower for cleaning is limited.

Even though a "blue box" was not provided for the bottles and cans, we did attempt to separate these after and placed them in a "blue box".

Just to make you aware that we are an environmentally conscious community, The Township of Glanbrook was the first Municipality under the County of Wentworth Board of Education to initiate recycling in the schools; a program which has proved very successful.

Again, though, thank you for your interest and caring.

Yours truly,

J. Robert Gerrie
Clerk-Administrator

:BAA

4d

OFFICE OF THE REGIONAL CLERK

MEMORANDUM

****

TO:	Ken Pidsadny Legislative Assistant Chairman's Advisory Committee on Environmental Issues	YOUR FILE:	
FROM:	Robert C. Prowse Regional Clerk Office of the Regional Clerk	OUR FILE: PHONE:	 546-4140
SUBJECT:	Council Referrals November 20, 1990	DATE:	1990 November 22

At the Regional Council meeting of November 20, 1990, the Clerk was directed to refer Communication Items No. 3 and 5, (correspondence attached) to the Chairman's Advisory Committee on Environmental Issues.

Would you please take the necessary steps to ensure these items appear on an upcoming agenda.

RCP/st
Attach.

RECEIVED NOV 5 1990

ontario hydro

700 University Avenue, Toronto, Ontario M5G 1X6

October 29, 1990

Reg Whynott
Chairman
Regional Municipality of
Hamilton-Wentworth
Box 910, 119 King Street West
HAMILTON, Ontario
L8N-3V9

Dear Mr. Whynott,

Lakeview Thermal Generating Station
Coal Ash Management Study - Public Information Centres

In 1988, Ontario Hydro initiated studies to assess coal ash management options for the Lakeview Thermal Generating Station, located in the City of Mississauga. Since its start-up in 1962, there has never been permanent on-site disposal capability at the Lakeview TGS and the coal ash had to be disposed of elsewhere. Currently, most of the coal ash produced at Lakeview TGS is used by a private company as a replacement material in cement production.

To ensure that the station can continue to produce the electricity needed by the people of Ontario, a new ash management system is required. Although coal ash utilization options continue to be pursued, an off-site coal ash management facility is necessary.

A full environmental assessment, under the Environmental Assessment Act, is underway at three quarry sites located in Orillia Township, the Town of Lincoln, and the Town of Haldimand.

Through our environmental assessment and site selection process, we have consulted with Provincial Government Ministries, Municipal Officials, and members of the public. Field work supporting the site selection process includes environmental studies, preliminary engineering, and community impact studies.

In order to bring you up to date on the study and receive your comments, Ontario Hydro will be holding another round of public information centres on November 6, 8 and 13, 1990 at the locations listed on the attachment. A special preview session will be held from 12:00 noon to 2:00 pm for elected and appointed officials and government staff.

I invite you to attend the information centre either during the preview or public hours, and discuss the Lakeview Ash Management Study with Hydro staff.

We will continue to keep you informed of the study progress. If you have any further questions or comments please contact me.

Sincerely,

Mark a St

Mark A. Stevenson
Consulting Community Relations Officer
Ontario Hydro, H8 B1
700 University Avenue
Toronto, Ontario
M5G 1X6

(416) 693-6115 (collect) or
(416) 592-3951 (collect)

attach

LAKEVIEW ASH MANAGEMENT STUDY
PUBLIC INFORMATION CENTRES:

Lincoln Quarry

November 6, 1990
Beamsville Lions Hall
4283 Mountain Street
Beamsville, Ontario

12:00 noon - 2:00 pm	Preview
2:00 pm - 9:30 pm	Public Information Centre

Uhthoff Quarry, Orillia

November 8, 1990
Orillia & District Agricultural Society Building
Fairgrounds Road
Orillia, Ontario

12:00 noon - 2:00 pm	Preview
2:00 pm - 9:30 pm	Public Information Centre

Cayuga Quarry

November 13, 1990
Cayuga Community Centre
McKay Street
Cayuga, Ontario

12:00 noon - 2:00 pm	Preview
2:00 pm - 9:30 pm	Public Information Centre

project newsletter

Number 2
October 1990

LAKEVIEW ASH MANAGEMENT STUDY

Three Possible Sites for Disposal of Coal Ash

Ontario Hydro has begun detailed environmental and technical evaluations of three possible disposal sites for coal ash produced at the Lakeview Generating Station in Mississauga – the Cayuga and Lincoln quarries, located in communities of the same name, and the Uhthoff Quarry, near Orillia. The sites are shown on the map below.

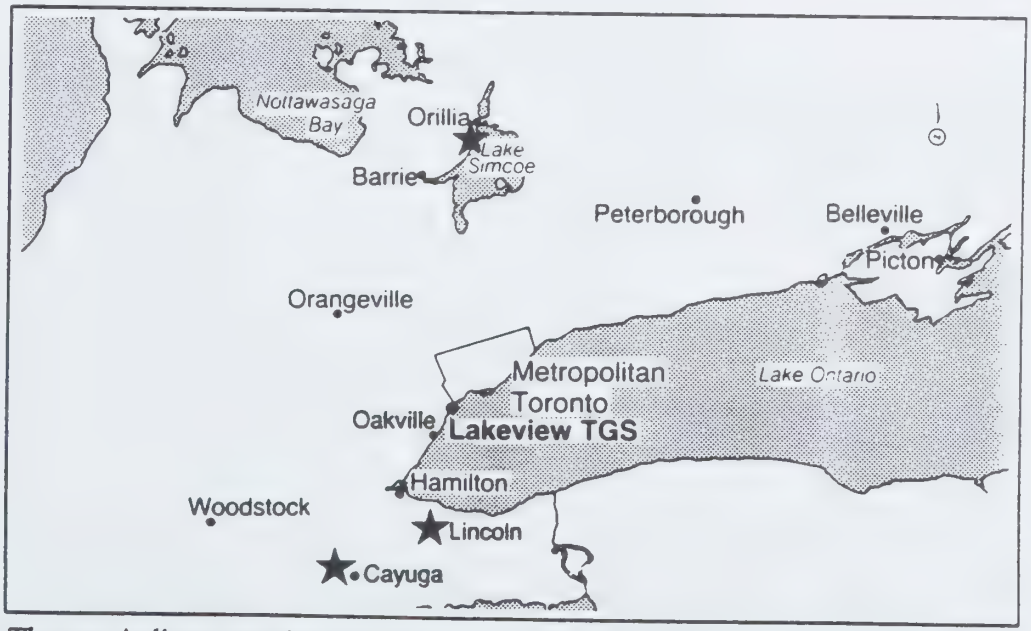
At the same time, the project team is also continuing to evaluate other alternatives for using the non-hazardous ash productively. These include recycling the ash in construction materials, introducing it as an additive to agricultural soils, and using it for backfilling, land reclamation and landfill cover.

These studies are part of an Environmental Assessment that has been underway since 1988 to develop a new ash management system for the Lakeview station. Development of the system is necessary to ensure the continued operation of the plant through the 1990s.

Meeting Ontario's Electricity Needs

The Lakeview Generating Station has an important role to play in meeting Ontario's future electricity needs. The station could supply about seven per cent of Hydro's generating capacity, helping to provide needed power during times of high electricity use. With the demand for electricity in Ontario continuing to grow, Lakeview is expected to be used even more heavily in the years ahead.

But for the station to continue operating, there must be a reliable means of disposing of the thousands of tonnes of coal ash it produces each year. Since its start-up in 1962, Lakeview



The stars indicate quarries that are being studied as possible coal ash disposal sites.

has been without a permanent, on-site ash storage facility. Until recently, most of the ash was placed in nearby pits and quarries, helping to rehabilitate them for recreational purposes and other uses.

In the past several years, the coal ash has also been provided to industrial companies for use in producing cement. With the expected increase in electricity generation at the station, and a resulting increase in the amount of ash produced, Hydro recently negotiated a 15 fold increase in the amount of ash it will provide to cement manufacturers. The contract term extends to 1996.

Even so, the increased use of Lakeview GS means that more ash may be produced than can be currently managed. While recycling and finding alternative uses for the ash continue to be Hydro's top priorities, there is also a need to locate and develop an off-site disposal facility.

This will ensure that the increased amounts of coal ash can be adequately managed, and that the Lakeview station can continue to generate electricity when needed by Ontario electricity consumers.

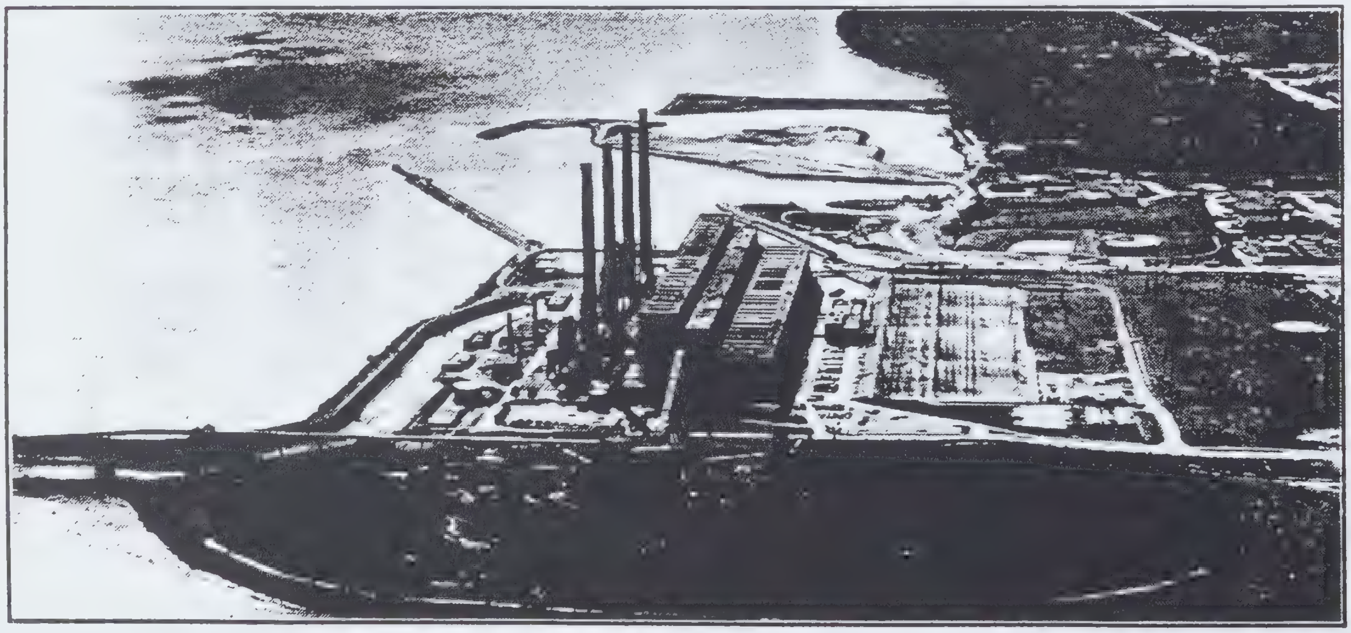
What is Coal Ash?

Two types of ash are produced when coal is burned to generate electricity, fly ash and bottom ash. Coal fly ash is fine and powdery and typically consists of iron, aluminium, silica, carbon and other elements. Bottom ash, which constitutes the remaining 10 to 20 per cent of the total ash, is coarse grained and granular, and is generally accepted as suitable construction material.

Coal ash (ie both bottom and fly ash) has been classified by the Ontario Ministry of the Environment as a non-hazardous, solid industrial waste. The Canadian Council on Occupational Health and Safety (CCOHS) has concluded that coal ash is a "nuisance dust", which can irritate and/or aggravate existing health conditions when not handled properly.

There is no evidence in the scientific literature of coal ash having carcinogenic properties.

Ontario Hydro has a great deal of experience in handling and transporting coal ash, and takes special measures to eliminate or minimize any possible dust nuisance to nearby residents.



The Lakeview Generating Station in Mississauga

Developing an Ash Management System

Because the Lakeview station is used only during periods of high electricity demand in the province, the amount of coal ash produced at the station and available to the construction industry can vary considerably. This is hindering Hydro's efforts to market the ash to cement companies, as a reliable supply of material is a critical business concern.

In addition, the use of coal ash for other purposes (including highway construction and structural fill) is currently restricted while the Ministry of the Environment reviews its classification.

Hydro is continuing to investigate these and other options for re-using its coal ash, but because of the uncertainties, various disposal sites are also being studied. These include the Cayuga, Lincoln and Uhthoff quarries, licensed landfill sites, and Ontario Hydro-owned properties.

In evaluating the various options and sites, full consideration is being given to possible effects on the natural environment and hydrogeology, as well as to the technical, social and community concerns. Consultation with the public is a crucial component of the process.

Following are brief summaries of some of the specific studies that are being undertaken:

Transportation:

Methods of moving the coal ash by road, rail and water from the Lakeview GS site to an approved management facility were evaluated and road transportation was selected as the preferred method.

Hydro is now studying alternative routes to each quarry site, and conducting traffic safety, traffic service and operations, socio-economic, and environmental analyses.

Social and Economic Studies:

In 1991, Hydro will complete an assessment of the potential social and economic impacts at each quarry site. The assessment will include the following:

- Interviews with local municipal officials, interest groups, business owners and community facility operators to assess potential socio-economic impacts;
- Studies to determine potential impacts on property values;
- Other studies identified by local residents; and
- Discussion with municipal officials on the community impact management program to be implemented at the preferred location.

Natural Environment Studies:

Earlier this year, the project team began studies at each quarry site, including:

- Surface and groundwater sampling;
- Vegetation and wildlife inventory;
- Aquatic life and fish habitats;
- Air quality, dust and noise sampling and modelling;
- Land use and land types; and
- Other studies identified by the public.

Hydrogeology:

The local hydrogeological environment for each quarry site was defined through field mapping, borehole geophysical logging, and surface ground water sampling. Reports describing the hydrogeological conditions have been prepared. Additional studies will be conducted to confirm that the underlying soil and rock in the vicinity of the sites is suitable for the development of a disposal facility.

Preliminary Design:

A preliminary design for the proposed coal ash disposal facility has been developed. The design takes into consideration site-specific differences. However, generally the design incorporates a low permeability clay liner, and a leachate collection system to control the generation and movement of leachate within and adjacent to the coal ash.

The clay liner will be sufficiently thick, and have suitable moisture content, to withstand the effects from placing the ash in the quarry, as well as typical quarry operations, such as blasting.

Water from the coal ash will be directed to a water retention pool where it will be tested and treated, if necessary, to meet Ministry of Environment Water Quality Guidelines before discharge. The coal ash will be covered and landscaped. The facility will be monitored (long-term) to ensure that coal ash leachate is not affecting the ground water quality off-site. These design features will ensure that the leachate will not damage the environment or affect local drinking water supplies.

Come to Our Information Centres

The best way for you to learn more about the study and express your views on the project is to attend one of the Public Information Centres listed below.

At the centre, you'll have a chance to question the project team, examine detailed maps, comment on the proposal, and tell us about your community. The centres are open from 2:00 pm to 9:30 pm.

Tuesday, November 6
Beamsville Lions Club
4283 Mountain Street
Beamsville, Ontario

Thursday, November 8
Main Hall
Orillia & District Agricultural Society Park
Fairgrounds Road
RR #2, Orillia

Tuesday, November 13
Cayuga Community Centre
McKay Street
Cayuga, Ontario

Involving the Public

Public involvement is playing an important role in the Lakeview Ash Management project. Local residents and government officials have been kept informed of the decisions in the study and have been encouraged to participate by attending the information centres and commenting on the proposal.

In addition, a Community Liaison Committee will be established to review the various project studies. The committee, made up of members of the community, local interest groups and government officials, will meet regularly to discuss the possible effects of the project and to monitor study results.

For More Information

If you can't attend an information centre but would like more information, call Mark Stevenson collect at (416) 693-6115 or (416) 592-3951.

If you want to leave a message, try the 24-hour Hydro Project Information Line at (416) 592-7943 (collect).

Or you can send your comments to:

Mark Stevenson
Community Relations Department
Room H8-B1
Ontario Hydro
700 University Avenue
Toronto, Ontario
M5G 1X6

Ontario Hydro
Let's give tomorrow a hand.

4e

DURHAM

The Regional
Municipality
of Durham

Clerks Department

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C.W. LUNDY, A.M.C.T.
Regional Clerk

October 31, 1990

The Honourable Zanana Akande
Minister of Community & Social Services
6th Floor, Hepburn Block
80 Grosvenor Street
Toronto, Ontario
M7A 1E9

General Welfare Assistance Costs

Honourable Minister, I advise that at their meeting held on October 17, 1990 the Council of the Regional Municipality of Durham passed the following resolution:

"WHEREAS, Regional and other applicable municipalities share with the senior levels of government the costs of general welfare assistance payments that includes allowances, benefits, administration, special assistance and supplementary aid; and

WHEREAS, the country appears to be heading into a recession and the costs of welfare are dramatically increasing and this has caused financial hardship to the Regional and other applicable municipalities; and

WHEREAS, municipal councils have no control over this situation as welfare payments are highly regulated by legislation and must be uniformly available across the Province.

THEREFORE BE IT RESOLVED that the Region of Durham strongly recommend that effective January 1, 1991, the Ministry of Community and Social Services assume 100% of the costs of the allowances, benefits and administration of an integrated income support program, including the full costs of special assistance and supplementary aid and that a copy of Joint Report #A/55-90 of the Chief Administrative Officer and #F/97-90 of the Commissioner of Finance be sent to the Minister of Community and Social Services, the Treasurer of Ontario, the Minister of Municipal Affairs, the Association of Municipalities of Ontario, other Regional Municipalities and local M.P.P.'s."

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REGIONAL [illegible]

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This paper contains recycled material.

I have enclosed a copy of the Staff Report referred to in the resolution of Regional Council within which you will note the major impact that welfare costs are having on our Region.

C-W Lundy

C.W. Lundy, A.M.C.T.
Regional Clerk

CWL:gc
Encl.

cc Hon. D. Cooke, Minister of Housing and Minister of Municipal Affairs
Hon. F. Laughren, Treasurer of Ontario
Hon. A. Pilkey, Minister of Industry, Trade and Technology
Mr. L. O'Connor, M.P.P.
Mr. G. Mills, M.P.P.
Mr. D. White, M.P.P.
Mr. J. Wiseman, M.P.P.
Mr. M. Dunbar, Executive Director, Association of Municipalities of Ontario
Mr. B. Calvert, Clerk, District Municipality of Muskoka
Mrs. M.L. Johnston, Clerk, Regional Municipality of Haldimand-Norfolk
Ms. L. Temple, Clerk/Director of Administrative Services, Regional Municipality of Halton
Mr. R.C. Prowse, Clerk, Regional Municipality of Hamilton-Wentworth
Mr. D. Crombie, Clerk, Municipality of Metropolitan Toronto
Mr. A. Pierson, Clerk, Municipality of Niagara
Ms. G. Brown, Clerk-Administrator Coordinator, Regional Municipality of Ottawa-Carleton
Ms. D. Trouten, Clerk, Regional Municipality of Peel
Mr. P. Philion, Clerk, Regional Municipality of Sudbury
Mrs. E. Stettner, Clerk, Regional Municipality of Waterloo
Mr. R. Vernon, Clerk, Regional Municipality of York
Mr. J.L. Gartley, Commissioner of Finance

OCTOBER 10, 1990

TO: THE CHAIRMAN AND MEMBERS OF THE FINANCE AND ADMINISTRATION COMMITTEE.

THE CHAIRMAN AND MEMBERS OF THE SPECIAL STANDING COMMITTEE.

THE CHAIRMAN OF THE PLANNING COMMITTEE.

THE CHAIRMAN OF THE HEALTH AND SOCIAL SERVICES COMMITTEE.

THE CHAIRMAN OF THE WORKS COMMITTEE

FROM: D.R. EVANS, P.ENG., CHIEF ADMINISTRATIVE OFFICER
J.L. GARTLEY, COMMISSIONER OF FINANCE

RE: REPORT #A/55-90 OF THE CHIEF ADMINISTRATIVE OFFICER
#F/97-90 OF THE COMMISSIONER OF FINANCE
THE PRELIMINARY 1991 NET REGIONAL LEVY REQUIRED FOR THE 1991 REGIONAL CURRENT BUDGET FOR GENERAL PURPOSES

RECOMMENDATIONS:

THAT we recommend to Council:

1) THAT the timetable be approved for the 1991 Net Regional Current Budget for General Purposes as reflected in Attachment 1, which sets a tentative date for Council review and approval of April 17, 1991.

2) THAT a budget target be approved as a guideline for the Regional Levy increase for 1991, over the levy for 1990, for use by all Standing Committees of Council, the Board of Police Commissioners and relevant Outside Agencies (Children's Aid Authority and Conservation Authorities) and the departments which report to such bodies.

3) THAT the Regional Chairman be requested to call an additional special meeting of pertinent Standing Committees to be followed by a special meeting of Council to develop a strategy to attempt to resolve the difficult financial position the Region is in due to the dramatic increase in welfare costs in 1990 and the anticipated increase in these costs in 1991.

REPORT:

1.0 BACKGROUND

1.1 Special Meeting to be held on October 10, 1990 to discuss the outlook for the 1991 Budgets

The purpose of the meeting will be to discuss the current financial situation; the outlook for the 1991 budget; and to make decisions with respect to timing, guidelines and any special measures that may seem appropriate in view of the current financial situation facing the Region.

1.2 Preliminary 1991 Budget Preparation

Brief preliminary discussions have been held between staff of the Finance Department and most major operating departments regarding the 1991 Regional Current and Capital Budgets for General Purposes. Preliminary estimates for budgetary purposes are now being prepared by various departments throughout the Region so that the 1991 Regional Current and Capital Budgets for general purposes can be consolidated for presentation to Standing Committees commencing in March and to Council on April 17, 1991. The 1991 Water, Sewer and Waste Disposal Current & Capital Budgets will be discussed at a later meeting, but it is hoped that these budgets can be reviewed and approved by Regional Council prior to April 17, 1991.

Attachment #1 of this report sets forth a recommended timetable for the 1991 Regional Current Budget for General Purposes, which results in a tentative date for Council review and approval of April 17, 1991.

It is becoming apparent that 1991 will be a very difficult year, financially, for the Region and the regional government sector, as a whole. Not only is there uncertainty with respect to the extent to which the impending recession will restrict the ability of municipalities to raise funds through the property tax system, but also the impact of the G.S.T. adds another element of uncertainty.

1.3 General Welfare Assistance

1990 has proven to be a very difficult year financially for the Region of Durham and other regional municipalities, because of rapidly escalating costs related to the General Welfare Assistance Program. To the end of August 1990, caseloads in the Region of Durham have increased by 59.2% over the corresponding caseload level in 1989. Furthermore, expenditures for General Welfare Assistance have increased by 87.1% from August 1989 to August 1990.

Based on preliminary conclusions, staff of the Social Services Department have forecasted that the upward trend in G.W.A. payments will continue into 1991. Their preliminary estimates indicate that total caseloads for 1991 will increase by 38% over 1990 and that Net Regional funding will increase from $11.3 million which is anticipated to be expended in 1990 to $17.8 million in 1991. This represents an increase of $6.5 million (Net Regional dollars) or a 8.9% increase in the 1991 Net Regional Levy.

2.0 ITEMS TO BE CONSIDERRED IN DISCUSSING THE 1991 NET REGIONAL LEVY

2.1 Suggested Increase of 6.9% to Accommodate Inflation and Assessment Growth

A preliminary 1991 "Base" Regional Current Budget for General Purposes, as contained in Attachment #2, would accommodate general inflationary increases for 1991 of approximately 4.0% and growth in assessment estimated at this time at 3.0%. The result is an increase in the 1991 Net Regional Levy of 6.9% over the 1990 Net Regional Levy.

In reviewing Attachment #2, it is evident that the single largest factor contributing to the increase in Regional expenditures for 1991 are estimates related to the General Welfare Assistance Program. The Social Services Department has estimated that welfare caseloads may increase in 1991 by 38% over 1990 caseload levels which will result in an increase in Net Regional funding of $6.5 million over the 1990 Budget for this purpose (from $11.3 million in 1990 to $17.8 million in 1991), or an increase of 8.9% in the 1991 Net Regional Levy. It should be appreciated that the welfare projections (estimates) for 1991 are very preliminary at this time and may change later in the 1991 Budget process.

2.2 Harsh Cost Cutting Measures Required to Meet 6.9% Increase in 1991 Levy and Fund Anticipated Increased Welfare Costs in 1991

Expenditures in other areas of the 1991 Budget must be drastically reduced and/or restricted if the Region is to continue to fund in 1991 the dramatic increase in welfare costs (using current cost-sharing ratios), while at the same time to limit the increase in the 1991 Net Regional Levy to 6.9%. The following measures (or other similar harsh measures) must be utilized in preparing the 1991 Net Regional Current Budget for General Purposes if a relatively low levy increase is to be achieved:

- A strict adherence to a moratorium or a "freeze" on the hiring of additional new staff positions in 1991. In Attachment #2 funds have not been provided for any new positions in 1991.
- Elimination in 1991 of all Special Capital Levies totalling $4.1 million for Police, Homes for the Aged, Waste Disposal/Roads and Regional Administrative Facilities, equivalent to the 1990 allocation.
- Elimination of all Capital Asset appropriations in 1991 totalling $3.1 million (including Police vehicles), ie. equivalent to the 1990 allocation.
- Restricting Departmental expenditures to an increase of 4.5% in 1991 over 1990, exclusive of annualization of costs related to new staff positions approved for 1990.

At this special meeting, the elected officials may wish to review the Region's policies for filling vacant positions in 1990, as well.

2.3 Special Levies

As indicated, in order to achieve a 6.9% increase in the 1991 Net Regional Levy, it will be necessary to eliminate all Special Capital Levies in 1991 totalling $4.1 million for Police, Homes for the Aged, Regional Administrative Facilities and Waste Disposal/Roads. By eliminating all special capital levies, the ability of the Region to respond to any unforseen contingencies will be severely restricted. For example, an additional $3 million had to be added to the 1990 Budget for the GWA Program predicted at the outset of the budget process. These funds were mainly transferred from special levy appropriations /requirements.

In past years, Council has been able to increase these levies in order to finance future capital requirements. By 100% elimination of these provisions in 1991, Council will be forced into debenture financing of capital requirements for police, roads, homes for the aged and new administrative facilities or to defer these much needed projects.

2.4 Non-Program Financing

Preliminary estimates have been included in Attachment #2 for non-program financing including supplementary taxes, the surplus from 1990 operations, Unconditional Grants and Unallocated Revenues. While these estimates are based on preliminary information, it is likely that revenues available for 1991 from supplementary taxes, as well as the anticipated surplus from 1990 operations will be significantly lower than that budgetted for 1990. Any additional revenues in these areas beyond that currently forecast perhaps could be diverted to the Special Capital Levies section of the Budget.

2.5 Board of Police Commissioners and Outside Agencies

It should be noted that the Board of Police Commissioners and Outside Agencies (Children's Aid and Conservation Authorities) have not been consulted at this point in time regarding their expenditure requirements for 1991; accordingly, the Board and Outside Agencies may not agree with the funding restrictions suggested in this report.

3.0 IMPACT ON 1991 NET REGIONAL LEVY OF ALTERING VARIOUS ACTIONS TAKEN IN THIS REPORT TO ACHIEVE THE 6.9% LEVY INCREASE

Staff have reviewed the impact on the 1991 Net Regional Levy of altering various assumptions regarding expenditures for capital assets, departmental requirements, new positions and general welfare assistance. The following is a summary of the alterations which have been reviewed here (obviously, there are many other alterations which could be reviewed as well).

3.1 Base Case (6.9% Increase in 1991 Net Regional Levy) Plus an Allowance for Capital Assets in 1991 Budget Equal to 50% of Capital Assets included in the 1990 Budgets ($1.55 million)

The impact is an additional 2.3% increase in the 1991 Net Regional Levy (ie. from 6.9% to 9.2%).

3.2 Base Case (6.9% Increase in 1991 Net Regional Levy) Plus an Allowance for Capital Assets in 1991 Budget Equal to 100% of Capital Assets included in the 1990 Budget ($3.1 million)

The impact is an additional 4.5% increase in the 1991 Net Regional Levy (ie. from 6.9% to 11.4%).

3.3 Base Case (6.9% Increase in 1991 Net Regional Levy) Plus an Allowance for An Additional Increase in Departmental Expenditures of 1% From 4.5% to 5.5%

For each additional 1% increase in departmental expenditures (ie. from 4.5% to 5.5%), the impact on the 1991 Net Regional Levy is also an additional 1% (ie. from 6.9% to 7.9%).

3.4 Base Case (6.9% Increase in 1991 Net Regional Levy) Less a Reduction in the Estimate of the 1991 GWA Expenditures so that the 1991 GWA Budget Equals the 1990 Actual GWA Costs Plus 4.5% (ie. This scenario assumes the Province would fund all GWA expenditures beyond a 4.5% increase over the Region's anticipated actual 1990 Cost of $11.3 million)

The impact is a decline in the 1991 Net Regional Levy of 8.3% (ie. from 6.9% increase to a 1.4% decrease). The Province would need to fund an additional $6.2 million beyond the funding it provides under the current cost-sharing ratios.

4.0 CONCLUSION

There is no doubt that 1991 will be a very difficult year for the Region in terms of financing its expenditure requirements for general purposes. It is anticipated that the rapidly escalating general welfare assistance costs will impose severe budget restrictions on all other areas of expenditure in the 1991 Regional Budget for General Purposes unless the new provincial government agrees to fund all or a greater portion of GWA costs next year.

The implications of limiting expenditures in other areas of the budget in 1991, to accommodate the increased welfare costs, are as follows:

- Reduced service levels in providing Regional services.
- Inability to react to unforeseen contingent liabilities as a result of eliminating Special Capital Levies ie. we were able to make use of some of these funds in 1990 to prevent a major deficit in general purpose operations.
- The need to debenture for roads and other capital projects (to our knowledge, Ontario County & Durham Region have never had to issue debentures for roads) or to defer these much needed projects into the future.
- No new capital assets would be purchased, including Police Vehicles.

Regional Council has established sound financial policies which are followed carefully by the municipality's senior appointment staff. Strict adherence to these policies has assured the financial stability and integrity of the Region for now and in the future, all things being equal. Dramatic increases in welfare costs, however, have placed a severe strain on the Region's financial position in 1990. It is not anticipated that the situation will improve in 1991. As a result, a strategy will need to be developed to attempt to resolve this situation before year-end. Hopefully, staff will receive some guidance from the elected officials at this meeting so that a position paper recommending corrective action can be prepared and discussed at a further special meeting to be called by the Regional Chairman.

DrEvans
D.R. Evans, P. Eng.
Chief Administrative Officer

Gartley
J.L. Gartley, CMA
Commissioner of Finance

ATTACHMENT #1

PROPOSED TIMETABLE FOR THE 1991 REGIONAL CURRENT BUDGETS FOR GENERAL PURPOSES

1)	1991 Budgets submitted to Finance Department Staff:	
	Regional Council, Chairman's Office, Chief Administrative Officer, Development, Clerk, Personnel, Solicitor, Information Systems, Health & Safety, Emergency Planning, Property Management, Finance, Planning, Non-Departmental, Durham Region Police, Health Services	Jan. 7/91
	Works and Social Services	Jan. 14
2)	Review of 1991 Budgets by the Chief Administrative Officer with Department Heads	Feb. 11-15
3)	Department Head review of 1991 Budgets & Recommended Guidelines	Feb. 18
4)	Finance & Administration Committee approval of 1991 Budget Guidelines	Feb. 27
5)	Council approval of 1991 Budget Guidelines	March 6
6)	Standing Committee review of 1991 Budgets	March 18-29
7)	Finance & Administration Committee review & approval of 1991 Budgets	April 2-4
8)	Council to review the 1991 Budget	April 17

Notes:

1. Winter School Break is March 11 to 15.
2. These dates assume that all deadlines will be met and that precise numbers on unconditional and conditional grants and that realistic estimates for assessment growth, and the surplus for the previous year will be available in early January.
3. Water & Sewer Rates Report and Water & Sewer Financing Report is scheduled for Council review on November 28, 1990.
4. The 1991 Water, Sewer and Waste Budgets will be discussed with the Chief Administrative Officer and the Works Department at a later date.

ATTACHMENT #2

1991 PRELIMINARY CURRENT BUDGETS FOR GENERAL PURPOSES TO MEET AN OVERALL 6.9% NET LEVY INCREASE, INCLUDING A PRELIMINARY GENERAL WELFARE CASELOAD INCREASE

Oct. 3, 1990 Net Expenditures	1990 Approved Budget	1991 4.5% General Increase	Percent Change	Percent Impact on Net Levy	Adjustment to 1991 Base (1)	Capital Assets Eliminated	1991 Preliminary Budget	Percent Change	Percent Impact on Net Levy
	$	$	%		$	$	$	%	
FINANCE & ADMIN COMMITTEE									
1. Regional Council	723,800	756,371	4.5	0.045	0	0	756,371	4.5	0.045
2. Chairman's Office	148,200	154,869	4.5	0.009	0	0	154,869	4.5	0.009
3. Chief Administrative Officer	159,900	167,096	4.5	0.010	0	0	167,096	4.5	0.010
4. Clerk	498,204	520,623	4.5	0.031	0	(7,900)	512,723	2.9	0.020
5. Personnel	716,047	748,269	4.5	0.044	18,800	(11,750)	755,319	5.5	0.054
6. Information Systems	1,003,759	1,048,928	4.5	0.062	10,500	(89,766)	969,662	(3.4)	(0.047)
7. Health & Safety	112,520	117,583	4.5	0.007	0	0	117,583	4.5	0.007
8. Emergency Planning	48,765	50,959	4.5	0.003	0	(9,100)	41,859	(14.2)	(0.009)
9. Emergency 911 Telephone System	56,834	800,000	N/A	1.020	0	0	800,000	N/A	1.020
10. Non-Departmental	648,824	678,021	4.5	0.040	450,223	(125,000)	1,003,244	54.6	0.486
11. Finance	2,408,015	2,516,376	4.5	0.149	80,000	(65,900)	2,530,476	5.1	0.160
12. Finance & Admin Committee	6,524,868	7,559,096	15.9	1.419	559,523	(309,416)	7,809,203	19.7	1.762
13. PLANNING COMMITTEE	2,098,947	2,193,400	4.5	0.130	178,500	(188,901)	2,182,999	4.0	0.115
SPECIAL STANDING COMMITTEE									
14. Economic Development	540,049	564,351	4.5	0.033	0	(4,300)	560,051	3.7	0.027
15. Solicitor	170,098	177,752	4.5	0.011	11,000	(1,000)	187,752	10.4	0.024
16. Special Standing Committee	710,147	742,104	4.5	0.044	11,000	(5,300)	747,804	5.3	0.052
WORKS COMMITTEE									
17. Works - Roads & Streets	11,304,280	11,812,973	4.5	0.698	0	0	11,812,973	4.5	0.698
18. - Roads Non-Subsidizable	1,235,000	1,290,575	4.5	0.076	0	0	1,290,575	4.5	0.076
19. - Less Roads Lot Levies	(5,928,042)	(6,194,804)	4.5	(0.366)	0	0	(6,194,804)	4.5	(0.366)
20. Roads Sub-total	6,611,238	6,908,744	4.5	0.408	0	0	6,908,744	4.5	0.408
21. - Property Management	2,009,635	2,100,069	4.5	0.124	190,000	(311,500)	1,978,569	(1.5)	(0.043)
22. - General	4,575,673	4,781,578	4.5	0.282	0	(753,655)	4,027,923	(12.0)	(0.751)
23. Works Committee	13,196,546	13,790,391	4.5	0.815	190,000	(1,065,155)	12,915,236	(2.1)	(0.386)
HEALTH & SOCIAL SERVICES COMMITTEE									
24. Health Services	1,575,511	1,646,409	4.5	0.097	70,400	(29,287)	1,687,522	7.1	0.154
25. Social Service -Homes for Aged	4,361,083	4,557,332	4.5	0.269	26,600	(312,901)	4,271,031	(2.1)	(0.124)
26. -Day Care	1,306,451	1,365,241	4.5	0.081	20,900	(12,604)	1,373,537	5.1	0.092
27. -Family Services	681,832	712,514	4.5	0.042	0	(7,500)	705,014	3.4	0.032
28. Social Service Sub-total	6,349,366	6,635,087	4.5	0.392	47,500	(333,005)	6,349,582	0.0	0.000
29. Health/Social Service Committee	7,924,877	8,281,496	4.5	0.489	117,900	(362,292)	8,037,104	1.4	0.154
30. DURHAM REGION POLICE	41,894,866	43,780,135	4.5	2.586	1,130,000	(1,109,988)	43,800,147	4.5	2.614
31. CHILDREN'S AID SOCIETY	1,981,060	2,070,208	4.5	0.122	0	0	2,070,208	4.5	0.122
32. CONSERVATION AUTHORITIES	1,592,412	1,664,071	4.5	0.098	0	0	1,664,071	4.5	0.098
33. Agencies Sub-total	3,573,472	3,734,278	4.5	0.221	0	0	3,734,278	4.5	0.221
34. Cumulative	75,923,723	80,080,899	5.5	5.703	2,186,923	(3,041,052)	79,226,770	4.4	4.531
SPECIAL LEVIES/RESERVES									
35. Police - Capital	1,000,000	1,000,000	0.0	0.000		(1,000,000)	0	(100.0)	(1.372)
36. Homes for the Aged - Capital	922,887	922,887	0.0	0.000		(922,887)	0	(100.0)	(1.266)
37. Waste Disposal/Roads	1,150,000	1,150,000	0.0	0.000		(1,150,000)	0	(100.0)	(1.578)
38. Regional Administrative Facilities	1,072,886	1,072,886	0.0	0.000		(1,072,886)	0	(100.0)	(1.472)
39. Pay Equity	450,000	450,000	0.0	0.000		0	450,000	0.0	0.000
40. Sub-total	4,595,773	4,595,773	0.0	0.000	0	(4,145,773)	450,000	(90.2)	(5.687)
41. Total Net Expenditures	80,519,496	84,676,672	5.2	5.703	2,186,923	(7,186,825)	79,676,770	(1.0)	(1.156)
NON-PROGRAM FINANCING									
42. Unconditional Grants	16,000,000	16,000,000	0.0	0.000			16,000,000	0.0	0.000
43. Prior Year's Surplus	875,300	150,000	(82.9)	(0.995)			150,000	(82.9)	(0.995)
44. Supplementary Taxes	1,375,000	527,500	(61.6)	(1.163)			527,500	(61.6)	(1.163)
45. Unallocated Revenue	680,000	680,000	0.0	0.000			680,000	0.0	0.000
46. Non-Program Financing Sub-Total	18,930,300	17,357,500	(8.3)	(2.158)	0	0	17,357,500	(8.3)	(2.158)
47. NET REGIONAL LEVY BEFORE WELFARE	61,589,196	67,319,172		7.861	2,186,923	(7,186,825)	62,319,270		1.002
48. Less Assessment Growth				3.000					3.000
49. AVERAGE NET LEVY IMPACT BEFORE WELFARE				4.861					(1.998)
50. Social Service - General Welfare	11,305,728	18,000,000	59.2	9.183	0	(193,463)	17,806,537	57.5	8.918
51. AVERAGE NET LEVY IMPACT	72,894,924	85,319,172		14.044	2,186,923	(7,380,288)	80,125,807		6.920

Note (1) Adjustments to the 1991 budget base include annualizations to full complement, annualization of of revenues & recoveries, and an amount in the Contingency account for Non-Departmental.

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The Banff Centre for Management

The Banff Centre for Management
is pleased to present:

FOSTERING SUSTAINABLE ECONOMIC DEVELOPMENT THROUGH COMMUNITY LEADERSHIP

January 27 to February 1, 1991

This unique seminar will bring together economic development professionals, elected community leaders and entrepreneurs to study the theory and practice of implementing sustainable economic development within their local communities.

The seminar will enable participants to identify economic development objectives which consider all sectors of the local economy; utilize a unified planning approach integrating local traditions, economic and social strengths and community history; and build skills in conceptualizing, planning and implementing sustainable economic development projects.

Methods of instruction will involve discussions of theoretical perspectives, analysis of case studies, small group "consulting" sessions and interactive dialogue.

For more information please contact:

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The Banff Centre
for Management

New perspectives to carry back to your own communities and implement.

FOSTERING SUSTAINABLE ECONOMIC DEVELOPMENT

Through Community Leadership

January 27 - February 1, 1991

What is Sustainable Economic Development?

The earth is ultimately a finite system and we believe there are limits to growth. Consequently, sustainable development must focus on renewable resources, sustained yield, recycling, and opportunities in the service industries.

"Sustainable development" is a phrase that freely falls from many lips. Ever since it entered the public domain in the Brundtland Report — **Our Common Future** — it has taken on a host of meanings. The faculty members have heard the term used to describe the gathering of musk oxen wool (kiviut) for cottage-industry production of toques; to describe zinc production at the Faro mine in the Yukon; and to characterize non-consumptive, special-market-niche tourism development in the eastern High Artic. In short it can be used in many contexts with diverse meanings.

In this seminar, "sustainable economic development" refers to a holistic process which includes employment creation, income generation, cultural enrichment, and the long-term promotion of ecological harmony in businesses that are prepared to meet inevitable economic cycles.

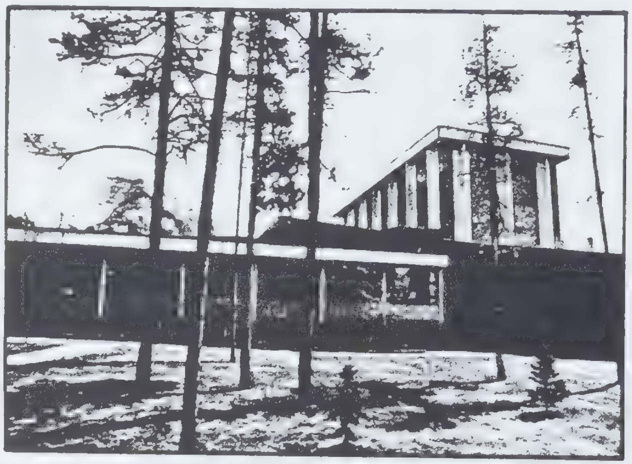
We will question the linking of sustainable development and perpetual economic growth.

Fostering sustainable economic development through community leadership will support economic development professionals, entrepreneurs and community leaders in their quest to bring about improved local employment and income, economic benefits and diversification while respecting the social and biological environment.

Participants work to clarify leadership roles in developing goals for economic development and strategies for implementing them.

Statement of Purpose and Background Philosophy

The Fostering Sustainable Economic Development Through Community Leadership seminar brings entrepreneurs, aspiring entrepreneurs, community leaders and economic development professionals together to study the theory and practice of implementing sustainable development. By better understanding unified development practices combining local employment, income, and community and corporate cultures with environmental stewardship, participants will learn practical strategies for application in small and northern communities. The seminar faculty combine theoretical, research and small business expertise and share one mission: fostering unified, sustainable development to break the bonds of government or single industry dependency by committees.



Our mountain campus allows participants to get away from day-to-day concerns and gain a new perspective.

Seminar Goals and Objectives

1. **Promotion of the Unified Approach**
   A unified approach to development will be stressed throughout the seminar, combining income and employment generation, community and corporate culture, leadership and environmental stewardship. The primary goal of the seminar is to demonstrate by case studies that technocratic, uni-dimensional economic planning does not work and that unified planning is the key to sustainable economic development.

2. **Setting Objectives Across all Sectors**
   The challenge we all face is the creation of a balanced, pragmatic and locally controlled economy, no matter the size of community. The seminar will also stress the need to identify economic development objectives which consider the contribution of all sectors to the local economy.

3. **Working to Local Strengths**
   The seminar will demonstrate the power and relevance of local traditions, economic and social strengths, and community history in planning for sustainable economic development.

4. **Practical Strategies for Leadership toward Sustainable Economic Development**
   The seminar will provide practical strategies to build skills in conceptualizing, planning and implementing sustainable economic development projects.

Methodology for Learning

The faculty will be responsive to the needs of seminar participants. Consequently, a pre-seminar questionnaire will be circulated to assess individual expectations of the course. During the seminar, faculty will consider special requests to work with participants on specific needs for information and guidance. Theoretical perspectives of sustainable economic development will be discussed in day one, however the majority of course time will be dedicated to discussing practical case studies, small group "consulting sessions" and interactive dialogue where concepts taught in the theory and case study sessions will be applied to several small community development scenarios.

Schedule

Plan to arrive on Sunday January 27th at 5:00 pm in time for registration and dinner. No formal session is planned, however this is a chance to meet faculty and orient yourselves to the campus.

Mission Statement

The Banff Centre for Management offers a wide variety of intensive, short-term (three days to three weeks) management programs which focus on creative leadership for managing change, exploring models from around the world of organizational innovation and new human resource development initiatives that help organizations operate successfully in a global society.

Our goal is to help managers function in an efficient, effective and harmonious manner in organizations which are being forced to adapt to a rapidly changing global environment.

Faculty

Your Program Director is:

MICHAEL ROBINSON

Michael Robinson is the Executive Director of the Arctic Institute of North America situated at the University of Calgary.

His career over the past 15 years has encompassed working with community development and social justice issues within government, industry, and academic environments. A Rhodes Scholar, Michael has degrees in Anthropology and Law, and is the Alberta board member for Friends of the Earth.

Other Faculty will include:
Mary Scott
Principal
Interfacts Consulting
Mary's professional background includes over 10 years in private consulting involving organizational, community and socio-economic planning and analysis. She has consulted in social and environmental management for northern and rural communities. Mary has been involved with this seminar since its inception 3 years ago.

Wanda Wuttunee
Research Associate
Arctic Institute of North America
Wanda is a sponsored Research Associate with the Arctic Institute of North America. She has degrees in Commerce, Law and Management, and has extensive research and consultation experience with community economic development.

Elmer Ghostkeeper
President and C.E.O.,
Ghostkeeper Store - Paddle Prairie Mall Corp.
Elmer is a highly successful and innovative business entrepreneur who lives and works in Paddle Prairie, Alberta. He is a past President of the Alberta Federation of Metis Settlement Associations.

Registration Form:

FOSTERING SUSTAINABLE ECONOMIC DEVELOPMENT

Through Community Leadership

January 27 - February 1, 1991

Name ____________________

Title ____________________

Name of Organization ____________________

____

Business Address ____________________

____

City/Province ____________________

Postal Code ____________________

Business Phone Number ____________________

Home Phone Number ____________________

$250.00 registration fee is required to hold your place in the program.

$1500.00 full seminar fee includes tuition, accommodation, meals, registration fee and course materials.

$100.00 discount for registrations received before January 1st, 1991; or 2 persons registering from the same organization.

In the event of cancellation prior to commencement of the program, all fees except the registration fee will be returned. In the event of non-attendance without notification of cancellation, the entire fee will be non-refundable.

Please make cheque payable to The Banff Centre.

The Scholarship Fund

The Banff Centre has scholarship funds for the purpose of granting tuition scholarships to assist potential Canadian participants who are unable to attend for financial reasons. Financial assistance will be awarded on the basis of need and the adjudged value of the seminar to the individual and/or organization.

Applicants wishing to apply for scholarship assistance should apply directly to The Banff Centre providing a letter detailing the amount of assistance required and your circumstances.

Upcoming Resource Management Programs

Native Canadian Relations
November 18 - 23, 1990

Geographic Information Management for Municipalities
November 25 - December 1, 1990

Advanced Environmental Dispute Settlement
January 13 - 18, 1991

Geographic Information Management for Integrated Resource Planning
February 3 - 9, 1991

Sustainable Development
February 10 - 15, 1991

Tools for Sustainable Development
February 17 - 23, 1991

Conflict Resolution
March 3 - 9, 1991

Managing Environmental Risks
March 24 - 29, 1991

Also in the planning stages:

Municipal Waste Management
Risk Management.

For more information or to register for the program, please contact:

Carole Niemy, Coordinator,
Resource Management
The Banff Centre for Management
Box 1020
Banff, Alberta T0L 0C0

Telephone (403) 762-6327
Fax: (403) 762-6422

Fax and phone registration are welcome!

The Banff Centre
for Management

RECYCLED PAPER

From Bill
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Ecological catastrophe ahead—Soviet official

MOSCOW (CP)—The Soviet Union faces "an ecological catastrophe" because of increased pollution at all levels of society and the absence of adequate laws to punish violators, one of the country's top legal officers said recently.

"I feel sorry for the children," Vladimir Andreyev, the Soviet Union's deputy chief prosecutor, said in an interview with the government newspaper Izvestia.

"If we leave the situation as it is, I've got enough information to warn you: In two or three years our country will face an ecological catastrophe."

Andreyev said a large part of the blame lies with weak Soviet laws on pollution and called for tough new legislation comparable to that already in effect in North America.

He described as unbelievable the level of untreated industrial waste, which he put at 34 billion cubic metres last year.

He told Izvestia that 60 million tonnes of pollutants were released into the atmosphere in 1989 while the use of agricultural pesticides skyrocketed 400 per cent.

"The content of lead, mercury and copper in the soil in some regions is dozens of times, and in some places, hundreds of times higher than the allowed concentrations."

He said 68 Soviet cities are already in a state of "ecological catastrophe" and warned that more would soon join them.

Andreyev did not identify the cities. But his statistics match those issued earlier by experts.

The Institute of Geography of the U.S.S.R. Academy of Sciences reported in June that it considered the region around the Aral Sea and around the Chernobyl nuclear disaster site in Ukraine to be "catastrophes."

It listed more than 300 other areas involving about one-seventh of the entire country as "critical" or "acute."

A Soviet government emergency plan adopted in March calls for a ban on all discharges of untreated effluents by the year 2000, implementation of large-scale measures aimed at amelioration of the country's water supply and a package of measures for the rational utilization of natural resources and wildlife.

But Andreyev complained bitterly in the interview that none of this goes far enough.

"The notion of an ecological crime has not even been formulated in the Soviet Union," he lamented as he called for tough new anti-pollution laws.

"But the tragedy is that in the last four years the number of ecological crimes has grown.

"What are the reasons?

"There are many of them: inertia, carelessness, (a sense of) impunity (because of the lack of tough laws), also a technical backwardness and a vulgar interpretation" of new Soviet policy that makes each individual factory responsible for its profit or loss.

Nuclear waste to be stored deep in Canadian Shield?

TORONTO (CP)—Imagine cutting a shaft in the solid granite of the Canadian Shield deep enough to swallow the CN Tower.

At the bottom would be a massive vault capable of holding 200,000 tonnes—the equivalent of 2,000 fully-loaded freight cars—of highly radioactive nuclear waste.

That, in essence, is the plan put forward by Atomic Energy of Canada Ltd., a federal Crown corporation, for getting rid of the deadly waste in temporary storage near Canada's nuclear plants.

The proposed facility would take 10 years to construct and cost $8 billion to $12 billion to build and operate.

First, the plan must pass a federal environmental review.

"This is the most complex subject we've ever reviewed," says Susan Toller of the Federal Environmental Assessment Review Office. "It's going to be incredible to assess it all."

The review is shaping up as a politically-charged debate in which critics of nuclear power will fight the concept on health and safety grounds.

"The solution of disposal in the Shield is imprudent," says Norm Rubin of Toronto-based Energy Probe.

Around the world, proposals for nuclear dumps have invariably run into controversy.

GONE TO COURT

Plans for a facility in Vermont were shelved after fierce opposition from the northeastern states. The latest plan in the United States would put the site in Utah, but that state has gone to court to stop it.

When geologists began field research for AECL near Madoc, Ont., in 1977, there was a public outcry. The Crown corporation was told it wasn't welcome and hasn't been back since.

It faced similar difficulties thoughout northern Ontario, but managed to proceed after the federal and Ontario governments stated that the research was not related to selecting a site.

Northern Ontario remains the most likely location for a dump. With 17 of Canada's 19 nuclear reactors and three more under construction, Ontario generates the lion's share of waste and has suitable terrain.

AECL is optimistic about getting public support. "We've got a very good technical solution that scientists will accept," says David Torgerson, a vice-president of AECL.

"We have a responsibility to deal with the waste in this generation," adds Torgerson. "We don't have the right to export that problem to the future."

Since Canada began using nuclear power in 1962, he says, it has accumulated 14,000 tonnes of highly radioactive waste—enough to fill an Olympic-size swimming pool.

DEADLY RADIATION

That may not seem like much, but spent fuel emits deadly radiation for centuries. Even after 500 years, some radioactive elements could be harmful if they got into air, water or food.

And the amount of waste is building up. The backlog is expected to reach 42,000 tonnes by 2000 and 191,000 tonnes by 2035.

"This takes on a very great importance indeed in light of the fact that there is still no proven method for disposing of this highly radioactive material," the Commons environment committee said in a 1987 report.

That report called for the waste to be urgently dealt with.

"A moratorium on the construction of nuclear power plants in Canada should be imposed until the people of Canada have agreed on an acceptable solution for the disposal of high-level radioactive waste," it said.

There is no official moratorium now, but no new nuclear plants have been approved since the Darlington facility, east of Toronto, which began producing power this year.

However, Ontario Hydro has proposed building three new plants in the next 25 years, and New Brunswick is considering a second plant at Point Lepreau.

Highly radioactive waste now is mostly stored in water-filled pools around nuclear power stations. Such units were never intended to be permanent.

Over the years, every conceivable method has been studied for disposing of nuclear waste—from shooting it into space to embedding it in glass.

Gradually scientists have settled on what they call the deep geological disposal concept.

REMAIN STABLE

"The Canadian Shield has been in place for 2½ billion years and hasn't shown significant movement," says Torgerson. "All we're asking is that it remain stable. At those depths, earthquakes will not have an impact."

The spent fuel would be locked into ceramic pellets. These would in turn be sealed inside zirconium-alloy tubes and placed in containers made of copper or titanium. The vault would be sealed with special clay and concrete.

Those measures don't satisfy anti-nuclear activists.

Energy Probe's Rubin says that even the most corrosion-resistant containers may deteriorate after long storage underground, allowing radioactive waste to leak out and contaminate ground water. "Of course radiation will reach the surface."

AECL concedes in a background document that "the operation of any nuclear facility may result in some emissions to the environment." But it says radiation from the deep disposal site would be a small fraction of that naturally occurring in the environment.

In a bid to reduce opposition, AECL has separated the environmental review from the site selection. The site will not be chosen until the technology is approved.

Gordon Edwards of the Canadian Coalition for Nuclear Responsiblity is critical of this approach.

"This whole exercise is part of an overall marketing strategy to get a piece of paper they can wave around and say, this problem has now been officially solved and therefore we can go ahead and sell more nuclear reactors."

Edwards adds that low-level radioactive waste, such as uranium mine tailings, presents a greater threat to the environment than high-level waste from power stations, which is safely stored for now.

"We have 150 million tonnes of low-level radioactive waste which are getting into rivers and lakes, et cetera. From a purely environmental point of view this is the top priority."

AECL confirms there are 165 million tonnes of uranium tailings in Canada, but says they are in natural basins enclosed by dams and are chemically treated to eliminate harmful effects on aquatic life.

There also are 250,000 cubic metres of other types of low-level radioactive waste, such as medical products, stored in temporary facilities.

Torgerson says there's research—but no firm proposal—on a permanent underground disposal site for low-level material.

For the time being, most attention is focused on the high-level waste.

And the environmental review will likely take a long time. A verdict isn't expected until 1994. Site selection would take another 10 years.

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